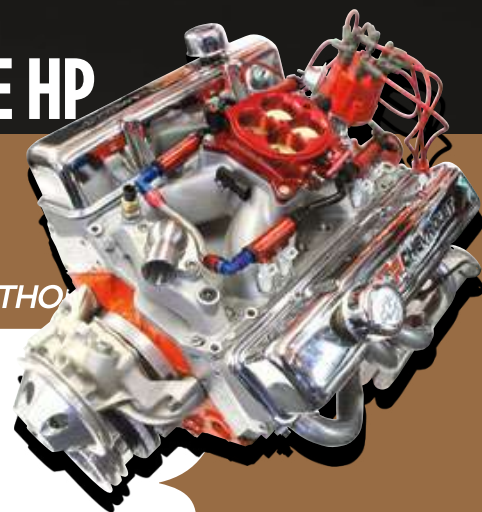


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★ON THE COVER: Celebrating 20 successful years of the Road Tour, our ARP/STREET RODDER '61 Ford Galaxie Sunliner convertible was built at the shop of Hollywood Hot Rods, painted at Starlite Rod & Kustom, all the while resting on a Roadster Shop chassis. Powered by a Ford Performance 427 V-8 equipped with twin TorqStorm superchargers, our hot rod can be seen coming and going while crisscrossing the U.S. Photography by Eric Geisert. ★INSET: Project Great Crate continues and this time we drop on FAST EFI and add more compression and cam to bump up the horsepower. Photography by Jeff Smith.

BY JERRY DIXEY

The Latest 2015 ARP/STREET RODDER Road Tour Information

A Winning Season!

There is truth to the saying “Times flies when you are having fun!” As this is written, with half of the summer in our rearview mirror and four tours of the 2015 ARP/STREET RODDER Road Tour season completed, time is going fast and we are definitely having lots of fun. The NHRA Motorsports Museum Tour kicked off with an unveiling of our Sunliner in front of the museum in early June. That tour took us across the country to Austin, Texas, and the thriving hot rod scene in the Lone Star State. The Vintage Air Tour started at their headquarters in San Antonio and made a beeline to Bowling Green, Kentucky, and the NHRA Hot Rod Reunion. From Bowling Green we headed out on the Devlin Rod and Customs Tour and stopped at Speedway Motors and Wichita on our way to the NSRA Rocky Mountain Nationals to complete the Lokar Triple Crown Challenge of three tours in a row.



◆ Where do you kick off the NHRA Motorsports Museum Tour? On their front steps in Pomona, CA, of course—with the destination being the hot rod town of Austin, TX.



◆ The Vintage Air Tour always provides plenty to see and do each year. Rick Love did not disappoint us as we made many cool stops on our way from San Antonio to the Holley National Hot Rod Reunion in Bowling Green, KY.



◆ The destination for the Devlin Rod and Customs Tour was the NSRA Rocky Mountain Nationals. One of the most popular stops of that week was the Smith Collection Museum of American Speed at Speedway Motors, in Lincoln, NE.

In July, the ARP/STREET RODDER Road Tour was front and center at the huge Syracuse Nationals in New York. We continued on the Eastwood Summer Classic Tour to Pottstown, Pennsylvania. The Eastwood Summer Classic was bigger than ever this year with more than 500 vehicles showing up for this annual event. Louisville, Kentucky, and the NSRA Street Rod Nationals is just ahead. From there, the Autopalooza.org Tour travels directly to the Woodward Dream Cruise in Detroit. On Labor Day weekend, the Road Tour will be part of the festivities in Auburn, Indiana, as the Shades of the Past Tour heads to Pigeon Forge and the Hot Rod



◆ The Syracuse Nationals continues to grow and so does the Eastwood Summer Classic event in Pottstown, PA. This year, more than 500 cars joined the fun at the end of the Eastwood Summer Classic Tour.

Roundup. From Pigeon Forge we will plug Burlington, Vermont, into the GPS and travel to New England and the NSRA Northeast Nationals. We will wrap up the season in the Golden State as the Sherm's Custom Plating Tour rolls from the San Diego area to the NHRA California Hot Rod Reunion at iconic Famoso Raceway just north of Bakersfield.

As we wrap up this 20th anniversary season, we can't let ourselves get too nostalgic. It is already time to make plans for next year as the ARP/STREET RODDER Road Tour turns 21 and we have some big plans in the works. Stay tuned. We are not done yet.



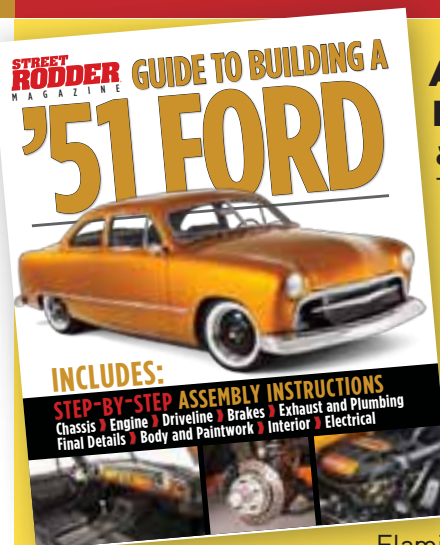
Guide to Building a Tri-Five Chevy

Follow along as Woody's Street Rodz builds the 2011 AMSOIL/STREET RODDER Road Tour car

from the ground up. You'll see the latest techniques in everything from frame construction, suspension improvements, running gear updates, engine swaps, interior refinements, electrical system improvements as well as paint and body work tips to and including applying traditional flames. **\$19.95 + S&H**

A Guide to Building a Hot Rod Highboy Roadster Pickup

This manual shows how to build yourself a hot rod roadster pickup with the looks of a vintage hot rod but the modern performance found in today's components. We document the construction of this hot rod roadster pickup while at the shop of Zane Cullen's Creative Concepts, one of the country's premier builders. Based on a custom Shadow Rods '32 Ford chassis with an I-beam frontend, Super Bell spindles, steering arms, Wilwood disc brakes and a 427-inch small-block Ford engine. The enhanced Model T ('27) roadster pickup body is shaped to fit the more robust dimensions of the '32 Ford frame. **\$19.95 + S&H**



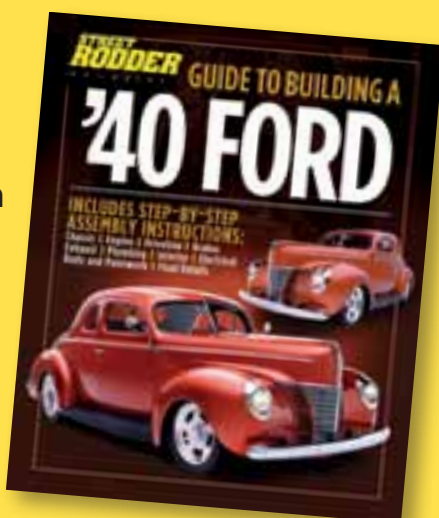
A Guide to Building a '51 Ford

The 2013 AMSOIL/STREET RODDER Road Tour '51 Ford project began with a Fatman '49-51 Ford chassis complete with stainless steel IFS control arms, front and rear sway bars, a

Flaming River manual rack-and-pinion, QA1 ProMa Star adjustable shocks, Wilwood disc brakes, a Dynotech driveshaft linked to a Ford 9-inch fitted with 4.11 gears and a limited-slip differential. Not to mention that our shoebox is powered by the latest from Ford Racing Performance: the EcoBoost 3.5L twin-turbo V-6 and a Ford 6R80 automatic overdrive. The Honest Charley Garage crew went to work on the body, using Dennis Carpenter Ford Restoration patch panels and shaving the taillight spears. You also may notice the top chop, 2 inches in front and 3-1/2 inches in back, and that the car is channeled. The result, a full custom '51 Ford Tudor that only took HCG ten months to complete, which includes installing an HCG custom interior with custom dash, bucket seats and a magnificent center console. Shoebox Ford lovers will need to own this book! **\$19.95 + S&H**

Guide to Building a '40 Ford

A complete start-to-finish manual on building a classic '39-40 Ford. Using an all-new Dennis Carpenter Ford Restoration Parts body for our Road Tour coupe, this book covers all phases of construction from the ground up. This manual includes chapters covering the chassis, engine, driveline, brakes, cooling, bodywork, paint, interior, and more. **\$19.95 + S&H**



Building a '49-54 Chevy

A trend-setting guide to building the hottest new cars on the street rod scene —'49-54 Chevrolets. With quality construction and attention to detail Woody's Hot Rodz is known for, the ride and handling offered by the Art Morrison chassis and the performance of the Smeding "stroker" small-block and Gearstar overdrive automatic our '52 Chevy sets the standard for a new era in street rodding. In short it combines contemporary road manners and passenger comfort with classic '50s automotive architecture. **\$19.95 + S&H**



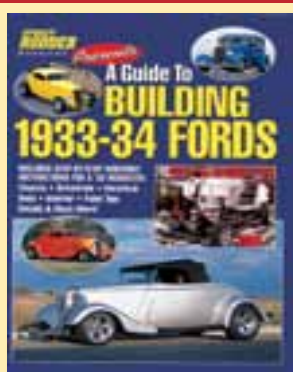
A Guide to Building a '33-34 Ford

A detailed look at Ford's milestone Model 40 for 1933 and 34. Starting with Henry's gamble to develop an entirely new car on the heels of the Deuce, we trace the development of the Model 40, detail the difference between '33s and '34s, and look at the impact they had on hot rodding. We then document the construction of an American Speed Company Speed33 from start to finish. **\$19.95 + S&H**

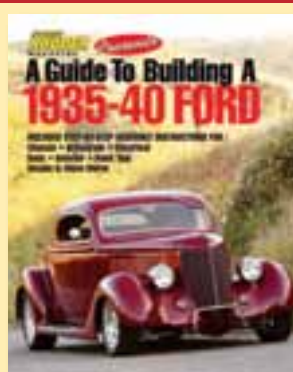
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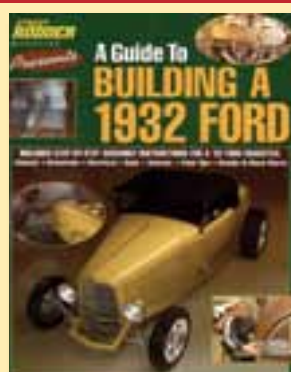
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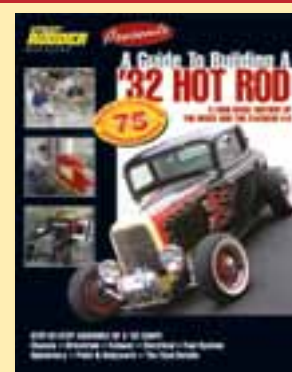
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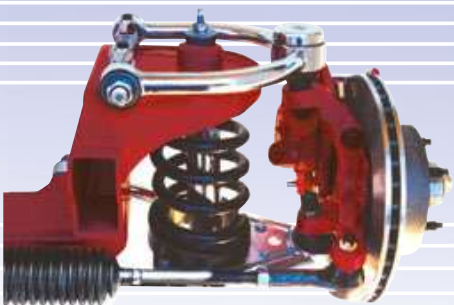
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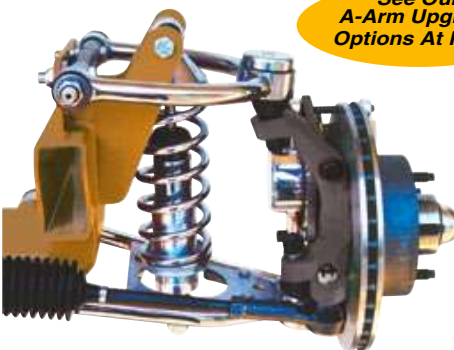
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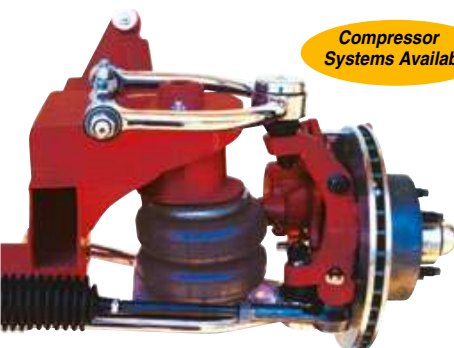
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- 1934 Olds Cars
- 1934-36 Pontiac Cars
- 1940-41 Graham Cars
- 1937-64 International Trucks
- 1934-47 Studebaker Cars
- 1936-64 Studebaker Trucks
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- 1933-37 Hupmobile Cars
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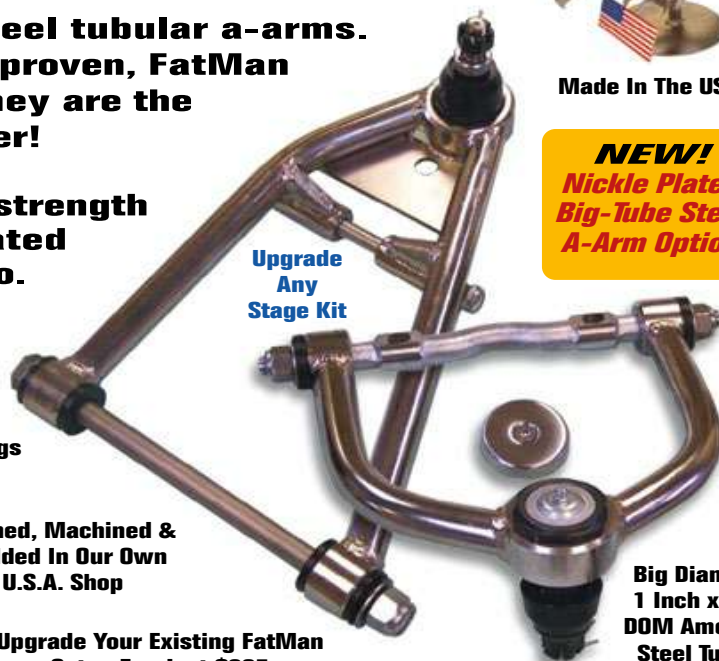
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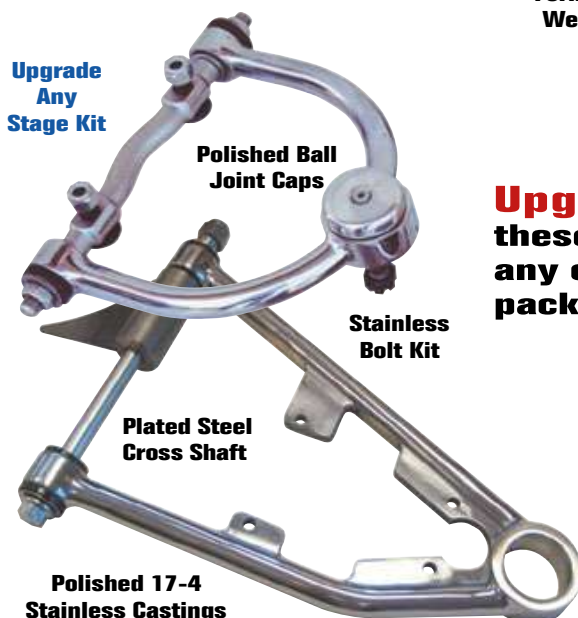


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Tales From The Tailgate

◆ **Once again** I find myself sitting on a tailgate. It's a typical Louisville night, hot and humid, and as is "norm" I'm people watching when it strikes me that it's the right time for ice cream. It wouldn't be fun all by my lonesome so I enlist two additional rodders wise in the ways of ice cream. There we are three rodders with varying degree of lower abdominal gastric disorder eating ice cream and making comments about everything and everyone that passes by. So far the evening's highlight is the fire truck with sirens blaring only to come back five minutes later ... no sirens. They told us it was a false alarm so they figured they had earned themselves an ice cream cone ... can't argue with sound logic.

Since the first T-bucket lit up Hollywood Boulevard our hobby has developed a highly customized vernacular. Words that mean nothing to the rest of the world mean everything to us. An example would be "T-bucket." To the unwashed masses it is at best confusing and undefined. If pressed for a definition we would hear everything but what we know it to be. To a hot rodder our "words" means everything.

Sitting with our butts firmly planted on a tailgate, while spooning down copious amounts of chocolate chunk (not chip) ice cream, life is good. Then the evening takes a wrong turn as the unmistakable sounds of a T-bucket reverberates off so many brick walls resulting from a less than adequate muffled exhaust. Well, John McLeod and I thought it was a T-bucket but apparently we were at one time poorly educated as Rick Love proceeds to chastise us. Rick then begins to pontificate, as he's prone, and tells us what constitutes a T-bucket. Well, here goes, the definition of what constitutes a T-bucket by a varied assortment of rodders.

Rick tells us that a T-bucket needs a shortened bed, no fenders, no hood, external to the frame exhaust, and, of course, it's of Model T origin. But he begins to expound that a T-bucket cannot have a turtleneck, beer keg, mini flatbed, oversized Moon fuel tank, or just "empty." Rick is clearly suffering from an overdose of fructose as John and I enlighten him that T-buckets can have or not have a bed, or any other form of contrivance hung off the rear.

It took some doing but once we distracted noted rodder and automotive journalist Ron Ceridono from his ice cream he agreed with John and I. Ron is no stranger to T-buckets, having built and

accumulated 200,000 wheels-to-the-road miles in every imaginable weather condition one can encounter in a bucket.

It was here we made our fatal mistake—we asked East Coast rodder Chuck Vranas. When you are trying to resolve matters of high interest and importance never ask someone from Boston. Next thing you know your tea is in the harbor and the donnybrook is on. According to Chuck, and he says he learned at the feet of the master of all things T-bucket, Norm Grabowski, Norm told him a T-bucket needs a shortened bed. Well, we can't argue with Norm, he was the personification of a hot rodder and knew a thing or two about T-buckets. Chuck also tells us that a T-bucket must have a shortened bed and it can't have a turtleneck, then it's a roadster. If the roadster has a hood then it's a modified. You would think Chuck would know since he owns one of the most recognizable T-buckets in the land—the Pink Lady. OK, we get where he's coming from but John and I are sticking with a T-bucket can have, or not have, a bed or other combinations.

To get further input we ask Damon Lee of Speedway Motors. Clearly Damon is of clear mind and astute judgment as he agrees with John and I that a T-bucket can have a shortened bed, no bed, or a turtleneck.

Next up a builder of cars Bobby Alloway who has built his share of hot rods and as it turns out a T-bucket or two. We thought he would be a good choice as he would give us an independent opinion of some value. It was Bobby's concerned, furrowed brow, opinion that a T-bucket could have a bed, no bed, turtleneck, or the obligatory 20-gallon beer keg turned into a gas tank. We knew he knew!

In an attempt to round out our research we asked Larry O'Toole the publisher of *Australian Street Rodder*. According to Larry in order to be a T-bucket the bed must be 22 inches or shorter ... longer bed it becomes a roadster pickup. Those Aussies!

Then came hot rodder supreme, valued *STREET RODDER* contributor, and the one man whose AARP membership predates all others, Gerry Burger. He displayed the type of logic we have come to value: "If you are close to kickin' the bucket then you can call them anything you want." I'm guessing all I've done so far is confuse matters, rile up a few bucket owners, and, in general, make a "dog's breakfast" out of this topic. Welcome to my world!

B. Brennan

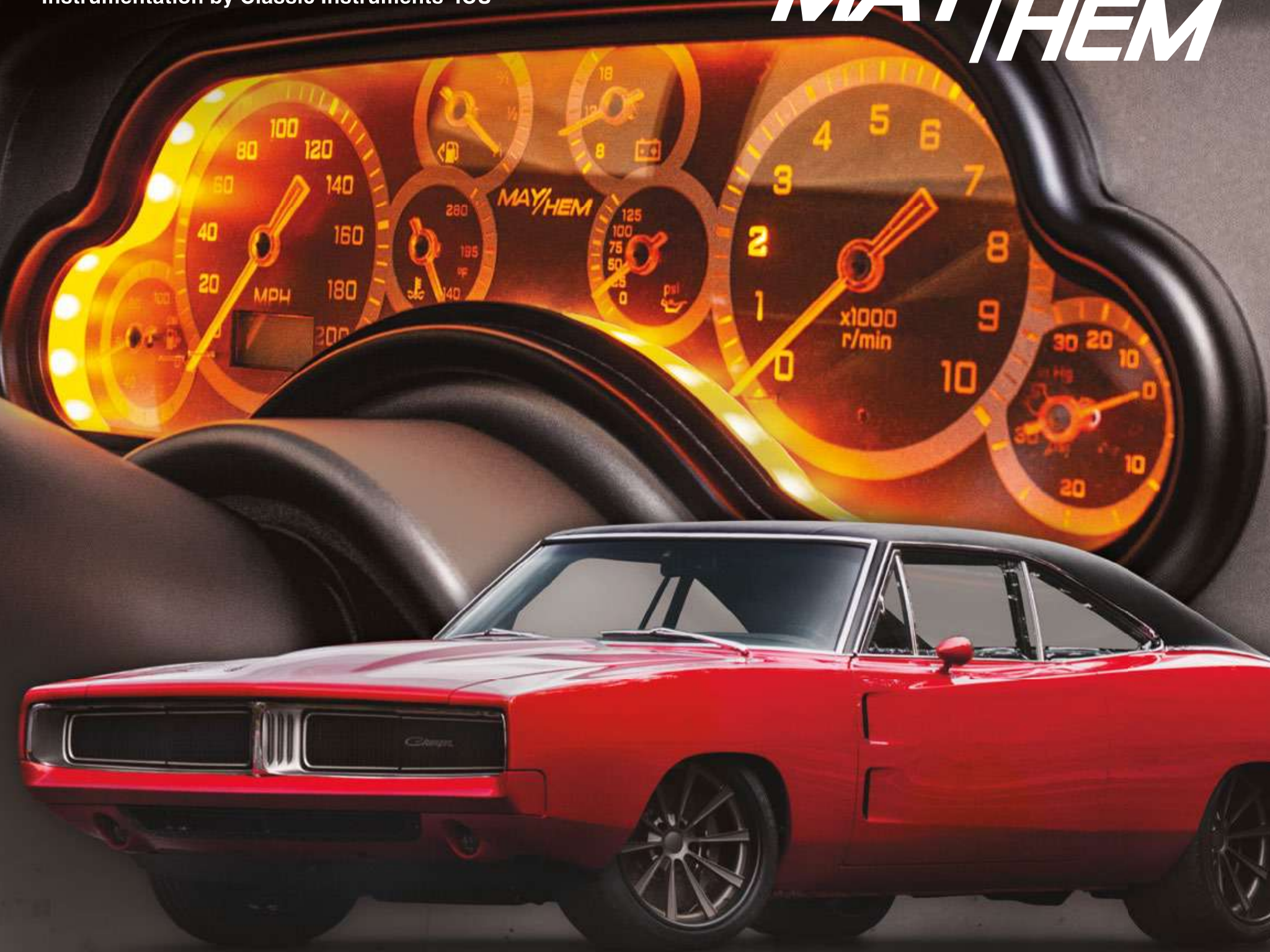
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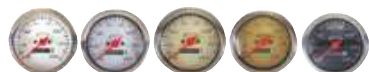


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★DEI Heat Soak Socks

The thermal tuners at DEI (Design Engineering Inc.) of Avon Lake, Ohio, say in hot temps, both performance and factory fuel injectors can be at risk of vapor lock or heat soak causing a rough idle, slow starting, or other annoying engine maladies. DEI has the solution by introducing fuel injector reflective heat covers that reflect direct and radiant heat away from the injectors. Constructed of glass fiber material bonded to a heat reflective aluminized material.



•Design Engineering Inc. (800) 264-9472 designengineering.com

★Righthand Bracket Kit

Wilwood Disc Brakes now provides total flexibility in selecting a mounting position for the Wilwood combination proportioning valve with the introduction of a new righthand mounting bracket kit. Available in a mounting bracket kit or bundled with the combination proportioning valve. The new kit adds to the existing product line that includes the ever-popular, lefthand mounting bracket kit.



•Wilwood (805) 388-1188 wilwood.com

★Delmo's Valve Cover Adapter

Delmo's valve cover adapters give modern LS engines the same retro feel as earlier more traditional Chevy small-block engines. These genuine billet aluminum adapters allow the use of small-block Chevy valve covers from 1955-59 with staggered bolt patterns or 1960 and later even bolt patterns to fit the wide range of engines in the LS family. Cleverly designed to accept the factory-style gasket they retain the original oil lip. Designed and developed in conjunction with Delmo's Speed & Kustom.



•Deeds Engineering (818) 842-2500 deedsengineering.com

★Mothers Waterless Wash & Wax

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JUNE 5 - 13

[1] THE NHRA MOTORSPORTS MUSEUM TOUR
NHRA MOTORSPORTS MUSEUM POMONA, CA - AUSTIN, TX



JUNE 13 - 20

[2] THE VINTAGE AIR TOUR
VINTAGE AIR, SAN ANTONIO, TX - NHRA BOWLING GREEN
HOT ROD REUNION, BOWLING GREEN, KY



JUNE 19 - 28

[3] THE DEVLIN ROD AND CUSTOMS TOUR
BOWLING GREEN HOT ROD REUNION -
NSRA ROCKY MOUNTAIN NATIONALS, PUEBLO, CO



JULY 17 - 25

[4] THE EASTWOOD SUMMER CLASSIC TOUR
THE SYRACUSE NATIONALS, SYRACUSE, NY -
THE EASTWOOD SUMMER CLASSIC, POTTSTOWN PA



AUGUST 6 - 15

[5] THE AUTOPALOOZA TOUR
THE NSRA STREET ROD NATIONALS, LOUISVILLE, KY -
THE WOODWARD DREAM CRUISE, DETROIT, MI



SEPTEMBER 4 - 12

[6] THE SHADES OF THE PAST TOUR
THE AUBURN FALL SWAP MEET & AUCTION, AUBURN, IN. -
SHADES OF THE PAST, PIGEON FORGE, TN



SEPTEMBER 11 - 20

[7] THE DYNAMAT TOUR
THE SHADES OF THE PAST, PIGEON FORGE, TN -
NSRA NORTHEAST NATIONALS, BURLINGTON, VT



OCTOBER 17 - 25

[8] THE SHERM'S CUSTOM PLATING TOUR
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EDITED BY TIM BERNSAU

★Eastwood Unstopped by Fire

Fire damaged a portion of The Eastwood Company headquarters two weeks before the Eastwood Summer Classic Tour (leg 4 of the ARP/*STREET RODDER* Road Tour) was scheduled to arrive at the Pottstown, Pennsylvania, facility for the annual Eastwood Summer Classic Car Show.

The good news is that nobody was injured and the damage was limited to a small portion of the building. The bad news is that the damage to the distribution center and other warehouse areas was severe, with water and smoke damage to merchandise and work areas.

As workers moved in, Eastwood got busy communicating with customers and vendors and working to get stalled distribution operations running as quickly as possible. "Eastwood is well on its way to

recovery and our team is doing an amazing job," promised Eastwood President Brian Huck at the time.

Shipping had resumed by the time the Road Tour arrived. Brian Huck told Road Tour leader Jerry

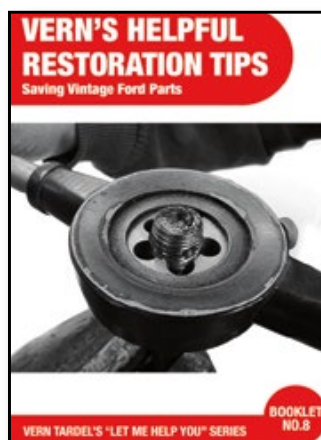


Dixey that the entire Eastwood team pulling together was responsible for overcoming the setback. The Eastwood Summer Classic was bigger and better than ever, drawing approximately 500 cars.

★Revive Your Old Ford Parts

We're collecting the whole set. The "Let Me Help You" series by hot rod builder Vern Tardel started with *Ford Steering*, followed by *Ford Transmission*, *Ford Brakes*, *Ford Ignition*, *Dropped Axle*, *Dropped Spindles*, *Stromberg 97*, and *Ford Generator*.

Vern's Helpful Restoration Tips: Saving Vintage Ford Parts is the latest addition to this series of instructional guides for owners and builders of early Fords. This time, the tips and techniques are not all Ford related. The advice for working with rusted, frozen, seized, and stubborn



parts is universal, and any DIY hot rodder or restorer will benefit from this 40-page guide. Tardel provides tips on 25 topics, including rust killers, restoring chrome and stainless, removing crossmember rivets, thread repair when you don't have the right die, and quick engine stands.

Like all "Let Me Help You" booklets, this one is packed with clear, simple instructions and helpful photographs. Contact Vern Tardel

Enterprises via verntardel.com for your copy of this or any of the previous booklets.

★Classic Hudson Wins Great Race

More than 100 participants in the 2015 Great Race spent eight days driving 2,400 miles along historic Route 66 before crossing the finish line on the Santa Monica Pier in California.

The *Hemmings Motor News* Great Race presented by Hagerty is an endurance road rally, testing the abilities of the drivers, navigators, and their vehicles. Great Race organizers change the race route every year, and chose the legendary "Mother Road" for the 2015 route, which started in Kirkwood, Missouri, and followed state, county, and local highways to the famous pier in Santa Monica, where racers were cheered by fans, family members, Corky Coker from Coker Tires, and curious tourists.

The Great Race includes cars from every era (1972 and earlier) and racers from every generation and region, including overseas. Winning requires concentration, navigational skills, and precision driving, instead of monstrous horsepower and time-warping speed.

The winner of this year's event was a '61 Hudson Hillclimber raced by the driver/navigator father/son team of Howard and Doug Sharp from Fairport, New York.



Plans for the 2016 *Hemmings Motor News* Great Race presented by Hagerty are already underway. Next year's event will commence in San Rafael, California, with the finish line in Moline, Illinois.



Read more about the 2015 Great Race finale and see a gallery of participating cars at www.hotrod.com/events/1507-great-race-2015-finale.

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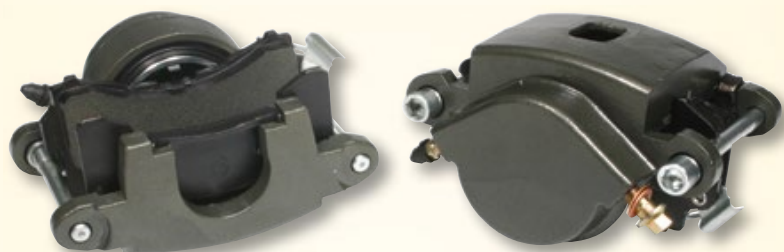


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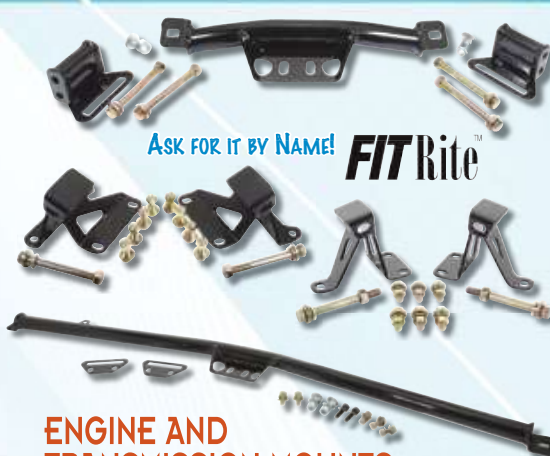
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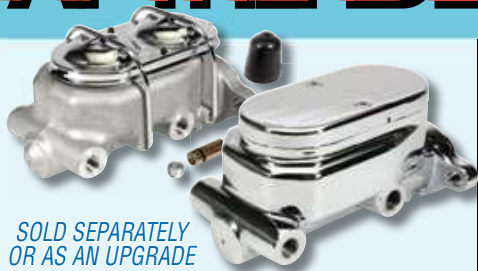
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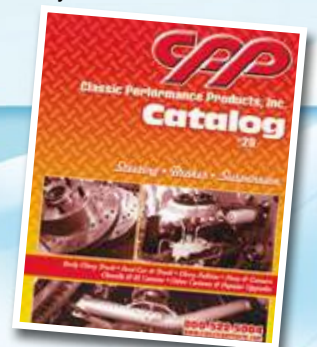
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1961 FORD SUNLINER

Twenty Years and Counting, the Road Tour
Proves you can Build 'em and Drive 'em

By BRIAN BRENNAN | Photography by ERIC GEISERT

Hard to believe 20 years have come and gone since the first Road Tour car was built. Can you remember back to 1996 and the '34 Ford coupe? The original idea came from the ever-active imaginations of then *STREET RODDER* Editor Tom Voge, his advertising counterpart Tim Foss, and Ohio-based hot rodder Jerry Dixey. (Dixey has continuously acted as the "Road Tour Chauffeur." He currently leads weeklong summer tours crisscrossing the heartland by driving single lanes to divided highways racking up thousands of miles on these cars.



The Road Tour program has grown to what it is today—a summer of fun for rodders wishing to drive along for a week, or an entire summer. However, the fundamental building block—to prove that our industry produces components that the average hot rodder can assemble into a street rod worthy of driving across town or across country—remains the same.)

This year we opted for another fullsize car to follow our wildly popular 2014 project—the '59 Chevy Impala. For 2015 the ARP/*STREET RODDER* Road Tour car is a '61 Ford Sunliner—a convertible. (A sister car of that era was the fastback design Starliner built during the years of 1960 and 1961. However, the convertible Sunliner was a nameplate Ford used for some time.) Each year we look

to the builders' surrounding area in the hopes of finding a car nearby. Finding a Sunliner proved to be a challenge, especially one that was in suitable condition to do the things designer Eric Black had placed on paper. Troy Ladd of Hollywood Hot Rods (HHR) was prepared to transfer to metal, Starlite Rod & Custom would be ready to perform the body- and paintwork, and Elegance Auto Interiors would be able to stitch together. To our rescue, literally, came longtime friend of *STREET RODDER*, and all hot rodders, George Poteet. Stashed away in a corner of his "future projects" bunker was just what we were looking for—a '61 Ford Sunliner. Poteet wanted to retain the drivetrain, which wasn't an issue as we were to have a freshly prepped Ford Performance small-block 427 crate



1961 FORD SUNLINER

motor that would accept the TorqStorm twin (yes, two) superchargers that then linked to a Hughes Performance 4L80E transmission (filled with AMSOIL INC. synthetic trans fluid) via an adaptor plate that allowed us to use tranny and related computer equipment. Linking the tranny to the 9-inch rearend is a Dynotech driveshaft.

Ladd is no stranger to the Road Tour program as he built our 2012 car, a '40 Ford coupe. Ladd works closely with designer Eric Black, who also designed our 2012 Road Tour '40 Ford. He would once again put his stylus to computer pad and design the look of this year's Ford Galaxie 500XL convertible. Being a drop-top the long, low, cruiser look needed representation. Black came up with a design that required a number of subtle sheetmetal changes, featuring a bold color with carefully placed use of lightly colored accents; all HHR's forte. Starlite Rod & Custom worked with HHR and Black to achieve just the right color combination. The deep blue is an '11 Ford hue from the PPG color charts; according to Starlite the paint codes are: SZ Blue Flame (body) and UJ Sterling Gray (accent). Look closely and you will see the use of the light

(gunmetal) gray in back below the decklid and in front liberally sprayed over much of the sheetmetal resting within the engine compartment.

The redesigned front sheetmetal is extensive but oh so artfully accomplished as to be "almost" undetectable. We said almost—HHR fired up the Miller Electric Manufacturing Company welding equipment and broke out the Eastwood metalworking tools, yielding the resulting mods to include, but not limited to, trimming off the front of the hood (note the rounded corners) and using the severed sheetmetal to fill in between the fenders. Next up the headlight buckets came from Speedway Motors and are the always-popular King Bees that were modified by HHR. From here a wire grille insert with a single horizontal bar was fabricated. Modifications also occurred to the windshield and the soft top. HHR retained the factory top hardware but modified the windshield (frame) to attain a shape more in keeping with the Starliner coupe (hardtop) appearance. The rear top iron (or bow) had 1 inch removed at the bottom necessitating relocated mounting holes. The center



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OUR ROAD TOUR CAR IS MANY THINGS, BUT OF PARAMOUNT IMPORTANCE IS **PERFORMANCE.**

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1961 FORD SUNLINER

iron had a 1/2-inch cut off at the bottom, forcing the metal tab where the center bow attaches refit. From here a 1/2 inch was cut from the mounting bracket that attaches the top bows to the windshield frame. The foremost top iron remained unchanged. Elegance Auto Interiors was called on to stitch new top material along with the innards, which also included a custom boot cover.

Since the windshield frame was modified by HHR the windshield became a ground-up project. AM Hot Rod Glass was asked to address the modified windshield frame by making new “glass,” yielding a flush-fit windshield. AM Hot Rod Glass produced a custom cast acrylic that offers superior optical clarity, is prepped with scratch-resistant coatings, UV stabilizers, and works well with our Specialty Power Windows windshield wipers. And it carries the much sought after DOT stamp of approval—critical, especially for the windshield. The new windshield was neatly wrapped in rubber from Steele Rubber Products, who also provided the weatherstripping and other rubber-related products. Because of its scratch-resistant characteristics the AM Hot Rod Glass acrylic

works well as a side/door glass that can be run repeatedly up and down without so much as a single scratch.

Our Road Tour car is many things, but of paramount importance is performance. The V-8 that rests between the Roadster Shop chassis frameroils and beneath all of the shiny paint came from Ford Performance. It began life as a 535hp 427ci crate package (PN M-6007-Z427FRT). These engines are based on the same block as the BOSS 351; Ford Performance refers to them “as a modern version of the legendary 427.” While one would have thought we would be satisfied with this power package ... think again.

The stock V-8 comes with 10.5:1 compression ratio but we were thinking about supercharging our engine so maybe we needed to address the topic of lowered compression. Speaking with SCAT, as they provided the crank and rods combo, a recommendation of something more along the line of 9:1 compression might be a little better suited for the demands of our driving needs.

Added to the small-block Ford 427 was FAST fuel injection from the COMP Performance Group and a

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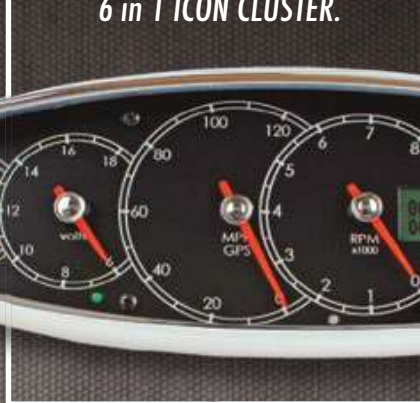
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The TorqStorm system includes billet mounting brackets and tubing. The simple setup involves running the tubes from the right and left superchargers up and over the top of the engine to the hat above the throttle body and intake manifold. HHR had their own vision for the engine compartment and decided to clean things up by hiding the tubes as much as possible. However, to make things visually more dramatic HHR fabricated a custom air cleaner that truly is fascinating to look at and works perfectly. To further enhance the underhood aesthetics, HHR turned to ARP and outfitted the engine and all its brackets with polished stainless 12-point hardware. Even the inner sheetmetal panels are now held together with polished ARP hardware. By accenting the engine through a combination of satin black and gray colors the

use of the polished ARP hardware truly does make for a dramatic presentation. Speaking of accenting—Sherm's Custom Plating was in charge of all of the brightwork, whether it be chrome or refurbished stainless trim.

Keeping the convertible looking its best you will see it hiding underneath a California Car Cover at night or Jerry (yes Jerry!) polishing the PPG paint and buffing Sherm's brilliant chrome and stainless trim with California Car Cover's Golden Shine line of car care products.

With the addition of the twin TorqStorm superchargers to our Ford Performance 427 we delivered it to the team at the Westech Performance group for dyno testing. With 8.7 pounds of boost we saw 648 hp at 6,000 rpm. While that's an impressive number what makes the wheels turn is torque; how about, 458 lb-ft at 3,100 rpm on the way to a peak of 593 lb-ft torque at 5,400. For fun Steve Brulé and the Westech crew swapped pulleys and upped the blowers' boost to 12.9 pounds, thereby producing 721 hp at 6,000 rpm and 634 lb-ft of torque at 4,900 rpm. One last gasp and 15 pounds of boost were heaped on, which resulted in max 790 hp and 692 lb-ft of torque. Brulé felt



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850 hp was easily within reach. Letting this brute breathe begins with Doug's Headers (PerTronix) with the spent gases running through stainless pipe measuring 2-1/2 inches and fabricated at HHR followed up with a pair of Flowmaster mufflers. However other demands for the car necessitated we claim our victory and move on. (To keep Dixey out of trouble we asked Westech to dial back the power—they did! Dixey tells us from the road that aside from the cruiser running smoothly and comfortably it is achieving 17 mpg/highway. For a car of this size, lack of aerodynamics, and horsepower this is truly amazing.) Maintaining Dixey's cool is a job left to the cool climes of the Vintage Air A/C but keeping the engine temps down isn't a challenge for the U.S. Radiator copper and brass cooler (filled with AMSOIL INC. coolant) equipped with electric fans. A fuel cooler with electric fans is also used to make sure the potent 'vert keeps out of fuel heat issues.

The chassis comes from the workbench at the Roadster Shop. It is a rectangular tube chassis that's outfitted with a Revo independent front suspension, Flaming River power rack-and-pinion steering plus steering column and three-

spoke wheel. In back a 9-inch rear end and pinion is equipped with limited-slip, 3.73 gears, and AMSOIL INC. gear oil. Fore and aft AFCO coilover shocks supplied by Speedway Motors and a Wilwood brake package are used.

Where the rubber meets the ground are 300 treadwear tires to maximize handling while measuring 245/40R18s in front and 305/35ZR20s in back. All the rubber is mounted to Billet Specialties Fury-style wheels, measuring in front 18x9 with 3.75-inch backspace and drilled with a 5x4.5 bolt circle and fitted to accept 1/2-20 Monster lugs. In back the same Billet Specialties Fury-style wheels with matching bolt circle, and Monster lugs but this time 3.5-inch backspace and wheels measuring 20x10. Nestled behind the 10-spoke Furys are Wilwood disc brakes and rotors in both the front and rear. A pair of Superlite six-piston calipers and 14-inch rotors can be seen in front while additional Superlite calipers but this time 12.88-inch rotors may be seen in the rear.

While there's plenty to look at over and under the vast sheetmetal, it's what's within the confines of the interior that the beautiful style and comfort comes to



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the forefront. Elegance Auto Interiors applied their craft neatly covering the Procar by SCAT front buckets and rear seating. Coupling EAI's handiwork with many industry frontline products such as Vintage Air heating and air conditioning system, Painless Performance wiring, Custom Autosound stereo, Lokar Performance Products, and loads of Dynamat neatly tucked under the carpeting and within the door panels the drop-top is both impressive to look at and drive. Snuggled deeply into the Procar bucket the next step is to grab the Flaming River leather-wrapped and drilled spoke steering wheel. One finds oneself looking at the Ford factory dash sprayed in a satin finish and housing, such items as the Dakota Digital analog sweep gauges (oil, speedo, water temp, fuel, and tach) that were custom built to fit the original Sunliner housings. They are backlit with black numbering on pale gray faces. More perusing and you will see the Vintage Air, Custom Autosound components fitted to the dash. As with any build there are numerous individual items

that are needed to wrap up any project, and as in years past we've looked to our friends at Speedway Motors to help us out with a myriad of individual pieces. A custom center console houses the Lokar shifter and the Dixey-mandated twin cup holders. (Dixey maintains that he must stay hydrated during the rigors of the Road Tour. We contend the only rigors Dixey will experience this year will be dealing with the convertible top-induced tangles within his flowing mullet hairdo!)

We've concluded 20 years of building, driving, and testing numerous products all under the banner of enjoying our street rods and in the process we've reached the farthest corners of our country. The last 20 years have truly flown by but we've learned a great deal, made countless new friends, gathered many stories, enjoyed a lifetime of fun, and visited places heretofore many of us would have seen only in books or on television. It's all history now. Now the time has come to let us build and drive another 20 years. **SR**

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♦ Longtime hot rodder Jack Chisenhall makes a parade pass pushing his recently restored Texas Speed Shop top fuel car with his cool '59 El Camino push car.

BOWLING GREEN NUMBER 13

The Holley NHRA Hot Rod Reunion Never Disappoints

By GERRY BURGER | Photography by THE AUTHOR

Really good hot rod events become familiar but never grow old. You develop a routine for the event, a methodical way of taking it all in that includes meeting some of the same old friends, eating at the same restaurants, and sitting in the same stands that have held drag race fans since 1952. Yes, the Holley NHRA 13th Annual Hot Rod Reunion is an event that has become very familiar but definitely not old.



♦ If you sat in the stands watching racing all weekend you missed what we fondly call "The Gassers on the Grass." There were plenty of street-going gassers in attendance this weekend, including Joe Jones and his cool '55.



♦ We captured this coupe turned pickup cruising into the racetrack. The little truck has great proportions and a real hot rod attitude.

We generally arrive Thursday and take a hike through the pits to watch the race cars unload, crews preparing the cars, and just get into the whole nostalgia drag race mood. The effort and work involved to prepare a race car is something to be appreciated as there is a lot more to this sport than simply rolling up to the line.

By the time we return from the pit walk the grass fields are filling

up with hot rods, muscle cars, and customs of every description. We generally run into several old friends in the field and spend some time swapping lies before moving on. This year the Reunion was a stop on the 2015 ARP/*STREET RODDER* Road Tour with a large contingent of hot rods traveling from Vintage Air headquarters in San Antonio, Texas, to Bowling Green.

As we were sitting under the Road Tour "big top" (and believe me the circus reference is accurate with ringmaster Jerry Dixey on hand), the first call to the staging lanes could be heard and it was time to get to the line for some serious nostalgia drag racing.

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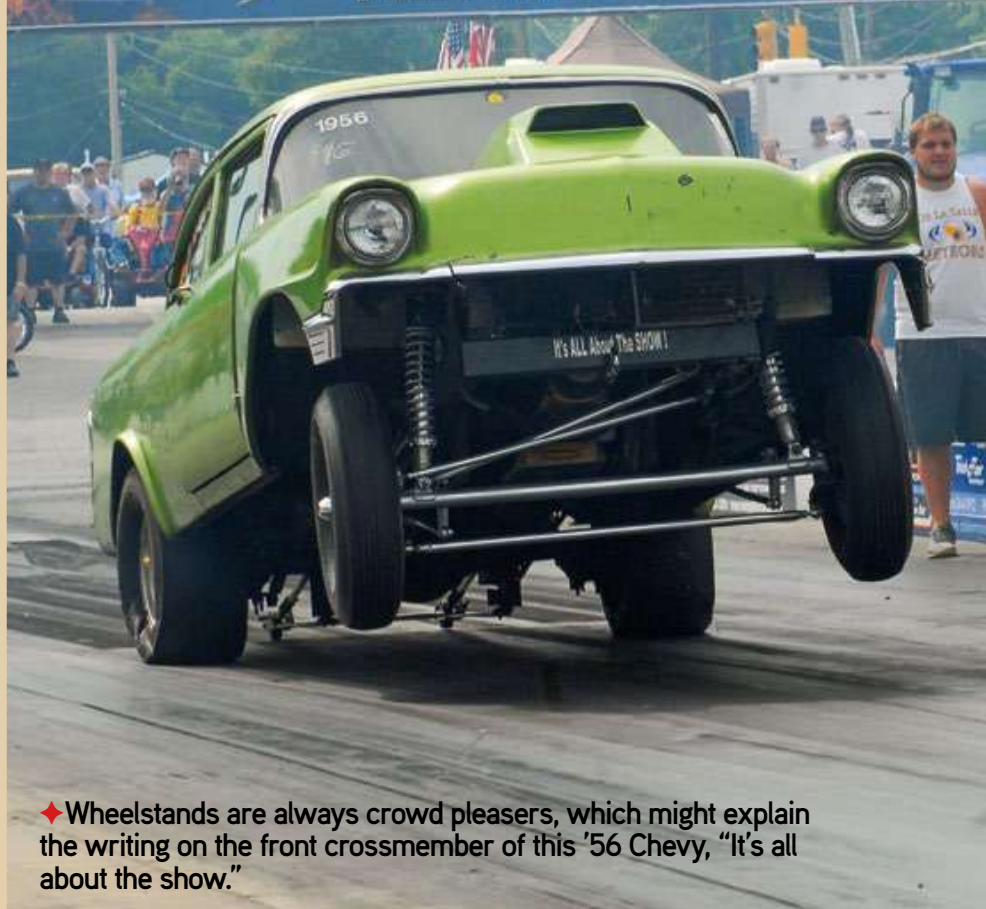
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BOWLING GREEN NUMBER 13

it was time for our first Brewster's ice cream followed by a walk through the display area of vintage race cars and vendors. It is here that we can meet pioneers of drag racing and enjoy the cars they drove.

Friday evening is the NHRA banquet followed by a mini cacklefest outside the host hotel. Six top fuel dragsters fire their engines to signify the beginning of the event. Dinner is generally at the very same restaurant every night, comfortably within walking distance of the motel.

Saturday is the big day for racing as the qualifying rounds are complete and the eliminations begin. We also notice there are different street cars in attendance each day of the event as some owners opt to do single days or the entire weekend. This year morning rain delayed the racing by about three hours so the racing continued into the night. While this makes for a long day, there is still something very cool about racing at night, more nostalgia on the classic Beech Bend Raceway Park.



♦ Wheelstands are always crowd pleasers, which might explain the writing on the front crossmember of this '56 Chevy, "It's all about the show."



♦ Once again in the crowd-pleasing category you'll find smoky burnouts. This '56 Chevy did a consistent job of filling the stands with blue smoke.



♦ Yes, there were periods of rain, but for the most part the event was dry enough for a complete race program. We captured these two classics leaving after the rains came late Friday afternoon.



♦ Great Olds a fire! This '50 Olds was flamin' hot and seeing the Mondello name on the side of the car ensures it was a fast Olds.



♦ "First call, all gas classes to the staging lanes please..."

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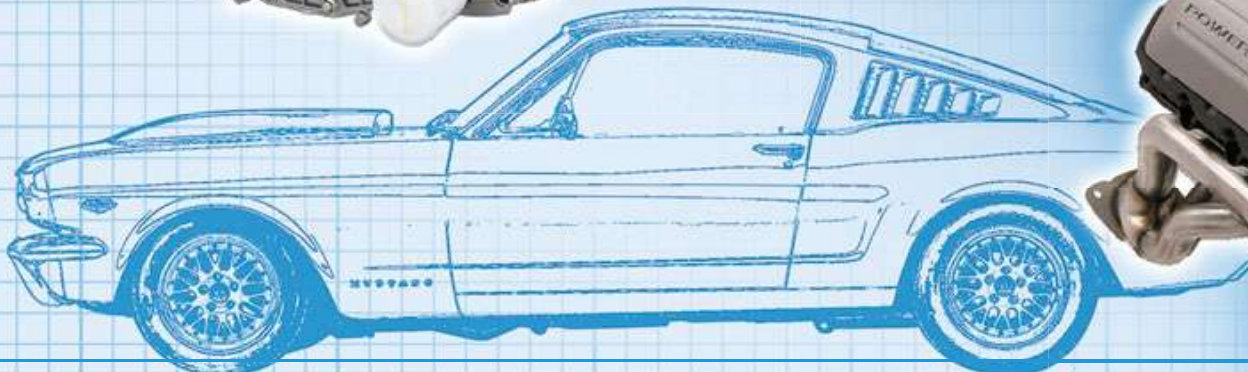
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BOWLING GREEN NUMBER 13

As the elimination wound down, the battle for king of the hill rolled into the staging lanes. Two huge burnouts signaled the final round of AA/FD. Tony Bartone has held a tight grip on the top fuel ranks with 22 consecutive winning passes that included a track record 5.56 during eliminations. Meanwhile 74-year-old Bill Dunlap and the High Speed Motorsports team just returned to top fuel after taking a year or two off to regroup. It was the classic East versus West top fuel battle and when the smoke cleared the West Coast High Speed Motorsports team took home the top prize with a 5.733 at 251.95. This is going to be a very interesting year in the Heritage Series Top Fuel ranks.

Due to the morning rain delay it was now almost 10 p.m. and NHRA did a great job of getting the cacklefest underway. Top fuel dragsters and Funny Cars lined both sides of the track and this year they opted for a split cacklefest, with one side of the track firing off followed by the second side. Once again, cackling at night is the best with the added dimension of flames lighting the night air. Immediately after the fire, flames, and fumes have come to a halt there is a huge round of applause and the fans are permitted on the race surface to see these



◆ This beautiful '55 Chevy launched hard, and when it was in the pits you could have held a tech class on '60s-era custom paint. From the pearl white base to endless line, freak spots, and fades this car was period perfect.

great race cars up close and personal. Then, it is time to work your way back to the car and watch hundreds of great street rods drive off into the night, closing the 13th Holley NHRA Hot Rod Reunion. We're already counting the days until number 14.



◆ Bumpers, grilles, and gravel pans were optional in the late '60s. This street-going gasser has the look, complete with a wheelwell full of headers.



◆ The great part of this event is you can take your street rod out for some eighth-mile passes. Beyond being great fun, you snag the bragging rights of "I raced at Beech Bend Raceway."



◆ You know sometimes building a really cool car is as simple as adding a set of wheels to a clean and simple body style. We offer this '64 Mercury Comet as graphic proof.



◆ Talk about a cool gasser, take your base '58 Plymouth Plaza sedan, add a straight axle, a set 4-inch aluminum front runners, and then add perfect graphics. We're not sure what's under the hood but a cross ram would seem natural.



UPGRADE IT!

Say goodbye to blown exhaust gaskets forever. Mr. Gasket Aluminum Layered Exhaust Gaskets conform to warped and damaged surfaces for an airtight, leak-proof seal and won't shrink or deteriorate EVER.

Loose bolts due to engine vibration and heat cycling are now a thing of the past.

Mr. Gasket HeadLock™ Header Bolts patent-pending design take the hassle out of header installation and make lock washers obsolete.

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♦ Steve Hardin has been driving this Deuce Cabriolet for many years and it still catches our eye. The flamed Deuce has made the trek from Indiana to the roadster show among other long hauls.



♦ This '48 Ford ragtop has a great stance and the steel wheels and whitewalls complete the mood. It appears this old Ford made a recent trip to the local louver shop.



♦ One very cool package was Rick Neal's '58 Ranchero sporting '58 Edsel front sheetmetal, towing an equally cool race car. The early rail is powered by a GMC six and runs under the banner of Toad's Speed Shop.



♦ The Dynamat Dynamic Legends tent was the place to gather autographs and do some bench racing with some of the real legends of drag racing.



♦ Stacey Young's Springfield, TN-based roadster is a cross between a basic hot rod roadster and a modern-day race car. Craftsmanship on the Hemi-powered rod is first class.

Carolina Custom



A TOTALLY NEW CONCEPT FOR INSTALLING OUTSIDE HANDLES



**NEW
ITEM**

Full glass interference bypass!

OUTSIDE HANDLE INSTALL/BELLCRANK KIT

An innovative solution to a common problem encountered when installing outside door handles on Model A's, 32's and other similar doors when the window channel or the glass will interfere with the ability to hook up the door handle to the rotary latch. The new Carolina Custom kit uses sliding nuts that allows mounting to the same two screws that hold the handle to the door, no matter what the pattern.

\$119.95

From the handle, linkage runs down to a bellcrank pivot mounted toward the bottom of the door. Another rod runs up the other side of the glass to the latch.

Kits include handle adapters, bellcranks, rods and all the necessary mounting hardware. This will allow installation of two handles.



Everything needed for a clean install!

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Suicide door safety pin kits are a necessity for safety on cars with suicide doors. They easily install with two screws. Kits are made from machined aluminum with stainless steel slide pins and knob shafts. Includes plastic snap in dress bushings for door jams, stainless steel screws and instructions. Black knobs are included. *Satin Aluminum Knobs \$30*
Manual kit . . . \$73.95 Power kit. . . \$123.95 *Polished Aluminum Knobs \$40*



NSRA Best Safety Product 1999

CAROLINA'S EXTREME HIDDEN HINGE KIT

3 mounting screws per hinge strap for strength. High strength cold roll steel hinge straps. Self lubricating bushing in hinge pocket / strap. Hardened and ground hinge pins / screws. Adjustable door stop. Adjustable bolt up pockets for doors. 90 degree opening most cars. Hidden switches for dome lights, alarms.

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Deluxe hidden hinge kits for 30's - 50's cars / trucks starting at \$369.95
Combo: hinges, latches and install kit. . . \$469.95



3 PIECE HOOD, HINGE AND LATCH KITS

Our double/triple opening kit is CNC machined from aluminum and stainless steel and allows the hood to be opened from the left, right or to be taken completely off. Kits available for steel and fiberglass hoods...not a universal kit! All kits include stainless steel hood props at no additional cost.



**NSRA Best
Product
1994**

Aluminum triple opening kit. \$399.95
Steel single opening kit. \$329.95

LATCH INSTALL KIT

Latch installation is now a snap! Our kit includes door section mounting plates and striker bolt floating nut plates with stainless latch screws. Latch plates feature die stamped screw head bosses to recess the screws for more clearance. Kits available for large, small and locking latches.



Kit for two doors. \$65.00
Kit when purchased with latches. \$60.00
Kit when purchased with hinge and latch combo. \$55.00

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Mounts over fender well. All parts are hidden except the satin aluminum arms. Reversible for either side. Available with either 100 or 200 lb actuators.



100# kit for average trunks. \$379.95
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Available with a choice of arms: round hole, ball mill lines or windows

EZ DOOR HANDLE INSTALL KIT

Easily install handles when using bearclaw latches. Inside kits are square for Ford or Mopar, and spline for GM vehicles. Outside kits for square shank shafts.



(2 Doors) (2 Doors)
Inside..... \$69.95 Outside...\$69.95

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Large and small standard(1 & 2) . . \$45.00 pair
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All aluminum construction

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30-35 Ford
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Hood brace kits stiffen your hood and make it fit better. Available in machined aluminum or steel.
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Great item for holding your doors open at car shows (2 doors) \$64.95

NSRA Best New Street Rod Product 1992 DOOR JAM WIRE ELIMINATOR KIT



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2 thru 9 contacts available packaged individually so the numbers can be mixed. Stainless contacts, compact size, available with or without dome light switch. Starting at \$44.95....Call for application

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♦ The Classical Gas Willys has a definite all-business look. This car was originally built in the '70s and today Derek Childress is both owner and driver. A 354-inch early Hemi powers the coupe.



♦ Chuck and Marcella Lipka campaign this '41 Willys with the Geezer Gassers. The 400-inch Olds motor provides ample power to boil the hides and to be competitive in the vintage gasser ranks.



♦ Due to the morning rain delay the cacklefest didn't get started until around 10 p.m., but that only added to the drama and effect.



♦ The Hillbilly Hemi always puts on a great show, and the flames look even better at night. The car is owned by Thompson & Sons, and we enjoyed seeing them pour water on the tires to keep the slicks from blistering.



♦ The Jenkins, T-bar & Cortines top fuel car was best remembered for the early use of a wing to provide downforce on the big slicks. Today the car is a favorite on the cacklefest tour.



♦ Yes, there actually was some top-down weather to be enjoyed as seen by this handsome red '47 Mercury heading out of the racetrack.



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Traditionals

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Roadsters



Listen to *Les Noyse*, automotive legend:

ACTION PACKED ADVENTURE is fun to watch, but it isn't how you want to travel. When you hit the road, a cool, quiet, solid, trouble free ride is what you want. That's exactly what's in store when you and your car get the DYNAMAT treatment. Dynamat is an amazing space age material that knocks out the noise. Go to the show, enjoy your car, and leave the noise behind!

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Illustration by George Trosley

HOLIDAY GIFT GUIDE

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Regulator Series Coilovers (limited edition) drastically improve your vehicle's handling and comfort with adjustable coilovers. Made in the USA. Widest selection of lengths, mounts, and spring rates to fit your street rod, hot rod, or classic truck. Upgrade your existing IFS, IRS, four-link or custom chassis with Aldan coilovers. Call to request your free catalog.

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Finally after 65 years (two years in the making), the side fender trim for the DeLuxe '47-'55 Chevy/GMC panel truck is here! (Plus, it also fits Suburbans.) Mirror-polished stainless as original, plus fasteners. Show quality!



PN TRT400:
12-piece set lower fender trims, \$1,550

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Use CODE # CT15 to receive \$10 off of \$100 order.

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★Lokar, Inc.

The Goolsby Edition by Lokar, Brake and Clutch Arms and Throttle Pedal Assembly (sold separately), are made of alloy steel construction. The Billet Aluminum Goolsby Edition pedal pads (shown here) come standard on the Goolsby Edition Brake and Clutch pedal arms. The pads may be purchased separately and come with 1/2-20 mounting studs to be compatible with most aftermarket brake and clutch arms. The Goolsby Edition Throttle Pedal also has a matching Goolsby Edition Billet Aluminum pedal pad.

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CPP now offers big brakes for the price of small brakes! These new CPP OE wheel kits are designed to work with stock or drop Mustang II spindles. CPP's newest brake kit is available in popular bolt patterns, including 5x4.5, 5x4.75, 5x5, 5x5.5, and 6x5.5. These kits come complete with forged billet aluminum hubs, 11.75-inch-diameter rotors for ultimate braking performance, 1/2-inch heavy-duty wheel studs, loaded Big Bore calipers (which have 20 percent piston area), custom caliper mount brackets, bearings, seals, hoses, and all mounting hardware. These kits are the ideal solution for poorly performing Mustang II brake systems. Kits start at \$499 complete! All CPP parts have lifetime warranty.

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CPP offers five-way adjusting tilt columns for those who want great performance at an affordable price! Made from a stainless steel 2-inch tube and available in plain (paintable), chrome, and black finish in five different lengths with or without key. Columns come with 1-inch DD output shaft and accepts any '67-94 GM steering wheel or aftermarket adapter. Column shift columns come with both three- and four-speed shift indicators. All CPP parts have lifetime warranty. Columns start at \$289.

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USA Weld
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March Performance's new Nostalgia Series system is created with a combination of vintage styling and low price; traditional V-belts (shown), reliable serpentine belts, or small-block Chevy short water pumps. Rigid one-piece alternator and A/C bracket, complete with alternator, A/C compressor, water pump, pulleys, and brackets. Power steering kits include remote or canister pump with belt adjustment tool and maintenance-free clear or black powerdercoating.

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Custom Autosound's "The System" allows you to keep the integrity of your vehicle intact yet enjoy quality sound like many of us have in new cars. Satellite speakers look like A/C vents and can be mounted under the dash, on kick panels, or even the package tray. The woofer can mount under the seat or in the trunk.

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The Remaster is a direct replacement for other master cylinders, and is available in 15/16-, 1-, and 1-1/8-inch bore sizes. Colors are gray or black anodized and polished along with a variety of custom finishes. Remaster is proudly made in Phoenix.

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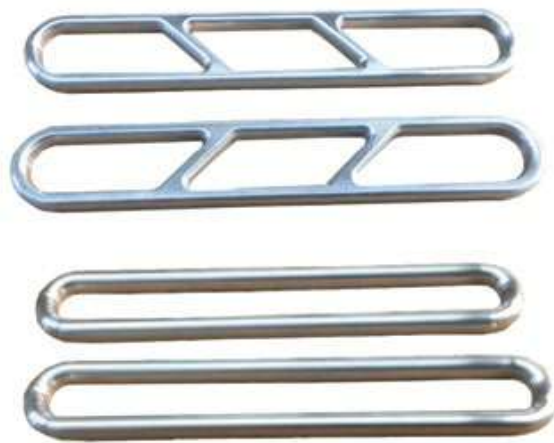


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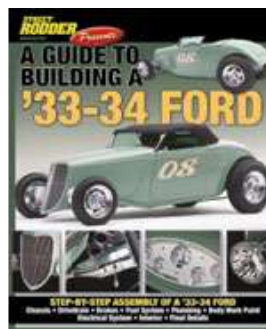
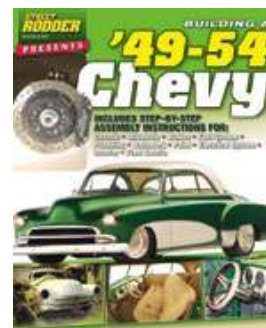
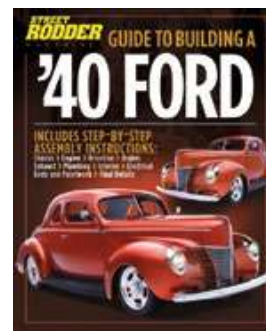
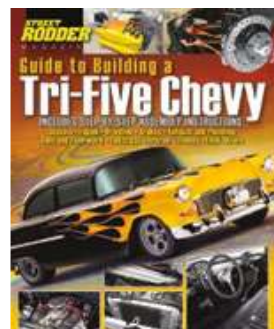
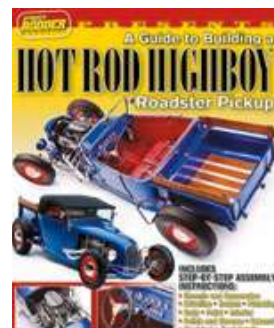
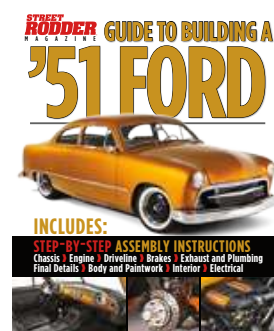
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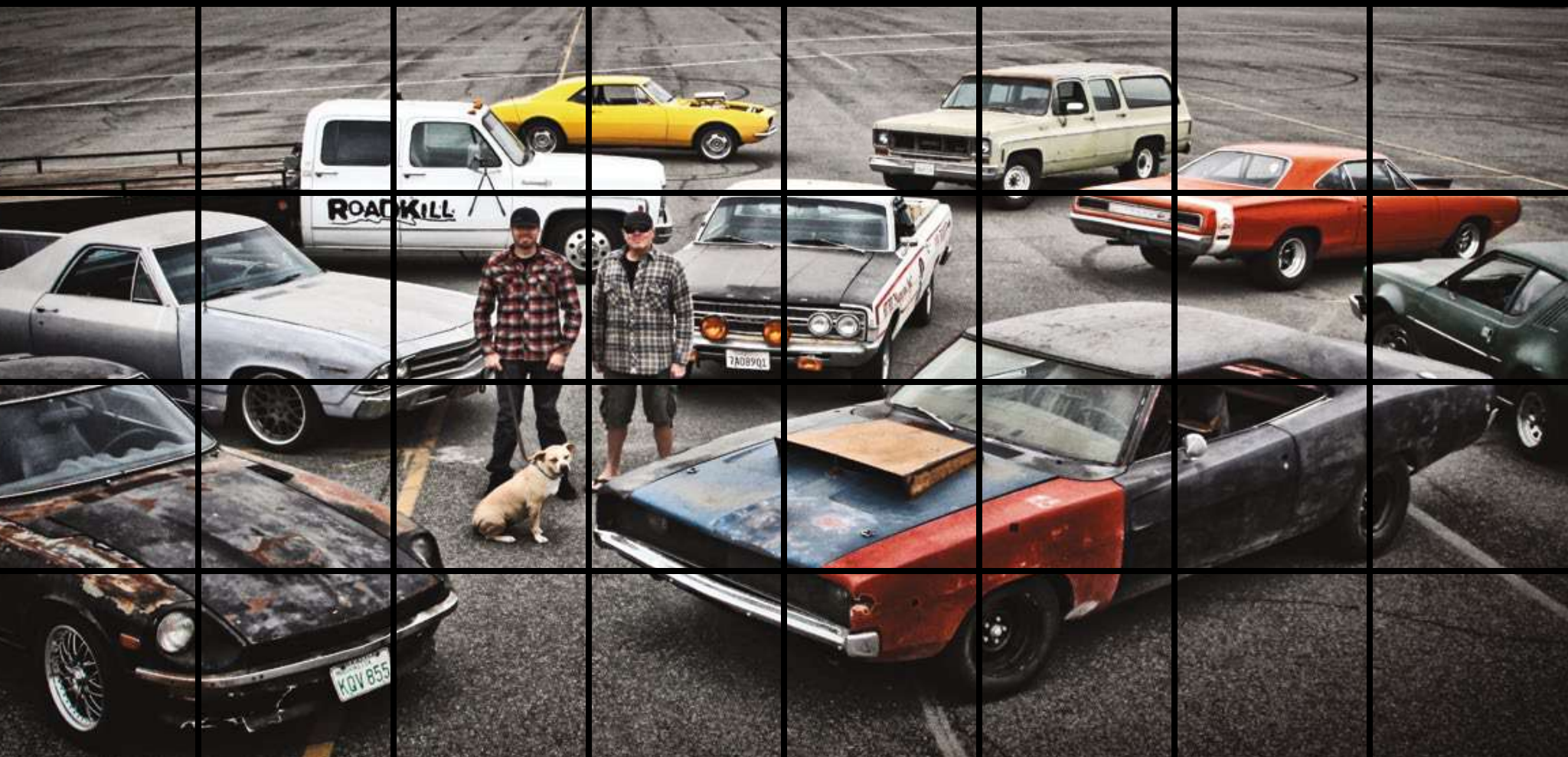
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\$3.99

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ANY SINGLE ITEM

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SAVE \$70

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• 1000 lb. Capacity

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Millermatic 190 MIG Welder

Improved Performance in a Smaller Package

By Ron Covell | Photography by the Author

➤ **Miller has recently released** a new MIG welder that is ideally suited to home car builders, or for professionals who need an easy-to-transport machine—the Millermatic 190. It welds steel from 24-gauge to 5/16-inch thickness. It can use solid wire, which requires a gas shield, or flux-core wire, which eliminates the need for gas. This machine incorporates inverter technology, which offers a host of benefits.

Miller has been making welding equipment for a very long time, and it's always interesting to see what new features they incorporate when bringing out a new machine. The biggest news is the adoption of inverter technology. This has been used in their industrial machines for years, and it offers significant benefits to welders of all sizes. What first caught my attention is the machine's small size and portability. It weighs only 35 pounds, so it's easy to throw in the trunk of a car and take anywhere that has a 240V outlet. The sophisticated inverter technology allows this smaller, lighter machine to perform even better than the model it replaces, and it's much more efficient, so it uses significantly less power. It offers very smooth arc starts, better arc stability under a variety of welding conditions, and it has a wider tolerance for arc length variations. It can be fitted with a spool gun too, which allows it to easily weld aluminum, using pure argon as the shielding gas.

When I first opened the cover of my new 190, I saw some changes with the internal wire-feeding system. It's a rugged,

all-metal design, and it's angled downward, like in their industrial machines. The cable for the MIG gun exits the front of the case, and gravity can cause the cable to droop slightly, making it more difficult to push the welding wire toward the gun. By angling the wire drive mechanism and the gun's cable, the welding wire follows a smoother path, lessening the friction.

Setup is quick and easy—the work clamp and gun are shipped unattached, and there is a clear instruction manual for those who may not be familiar with how they are connected. Another innovation on this machine is the Quick Select drive roll, which has three grooves, allowing the use of 0.024-inch, 0.030-inch, and flux-core wire. The drive roll fits on its spindle with a three-position drive pin so you can quickly select the groove appropriate for your wire size. Then a roll of wire is placed on the spindle; it can use either a 4- or 8-inch spool. The wire is fed through a guide, over the drive roll, and into the gun cable, and then the tension assembly is snapped shut. It's a good idea to test the tension,

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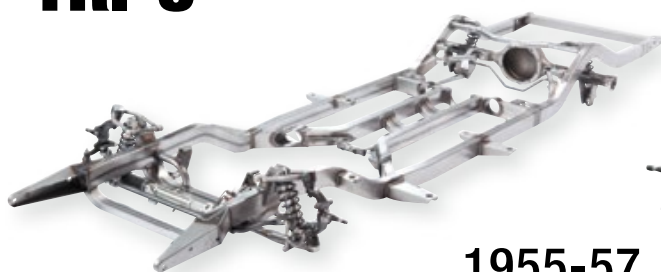
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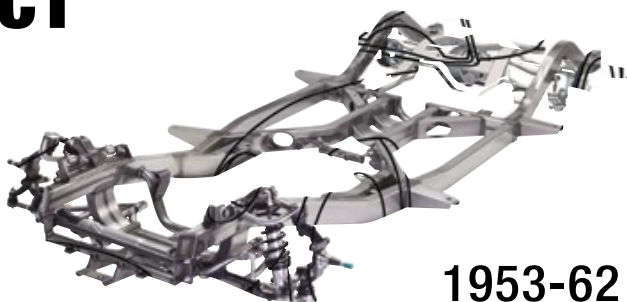
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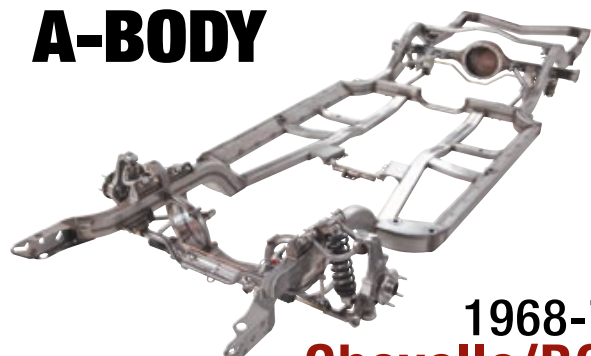
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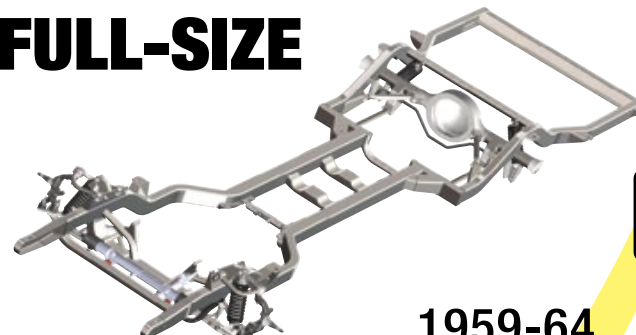
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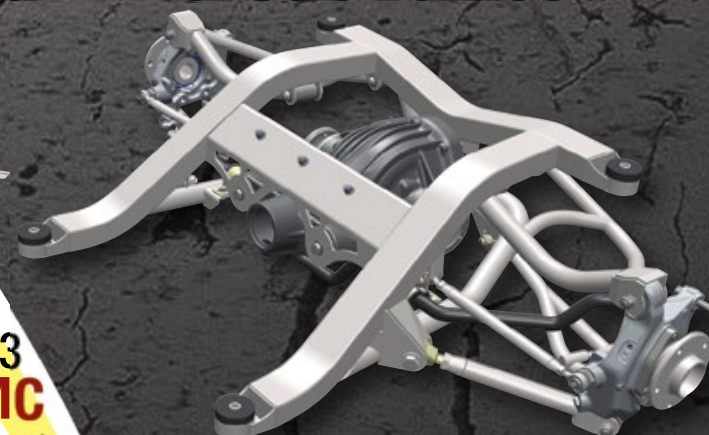
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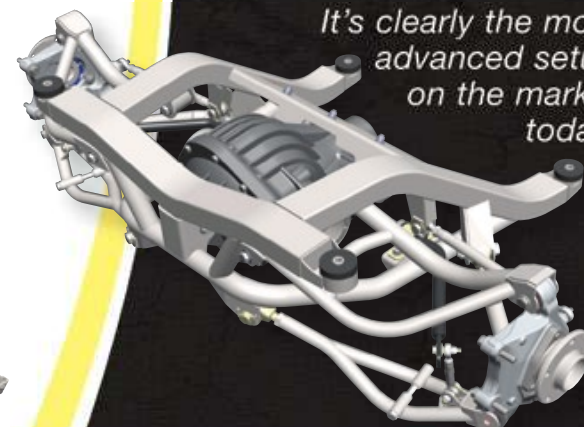


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especially when setting up a new machine, since either too much or too little pressure can cause problems. Again, the instruction manual clearly shows how this is done.

If you're using flux-core wire, no gas is required. This is ideal for outdoor or remote welding, since it makes the package extremely easy to set up and move. For street rod use, where the weld appearance can be important, solid welding wire and a shielding gas will make a better-looking weld, with much less spatter. I use C-25 gas (75 percent argon, 25 percent CO₂) since it makes the cleanest welds. The gas regulator and hose come with the machine, and you can source a gas bottle from a local welding distributor.

After the quick setup, I was ready to make my first weld.

The machine has a very clean, simple control panel, with all of the settings made with two knobs. Miller pioneered the Auto-Set system a few years ago, and it's a great way to help even novice operators get set up to weld very quickly. You simply select the diameter of the wire you're using on one dial, and the material thickness on the other. This sets the wire feed and voltage to values that are optimized for most welding situations. These settings worked very well for me, but of course you can make the settings manually if you like, and there is an easy-to-read chart inside the hinged side cover of the machine that lists the suggested parameters. Every welder has his/her own style, and some will want to "nudge" the wire feed and voltage settings to their liking.



1. This is the new Millermatic 190, a compact, inverter-based machine, ideal for car builders.



2. Here's the Quick Select wire drive roll, with grooves for three different wire sizes.



3. The machine has a rugged, all-metal-drive mechanism. It's angled downward, making it easier to feed the wire into the gun.



4. The control panel on the front of the machine is uncluttered, making it easy to read and understand.



5. Miller pioneered the Auto-Set feature, allowing one to get welding quickly. To use this feature, the wire size is selected with the right knob.



6. Next, the metal thickness is selected with the left knob, and you're ready to go, with settings optimized for most situations.



7. Some welders like to make their own settings, and there is a comprehensive chart inside the hinged side cover, listing the recommended parameters.

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My first tests were butt welds on 20-gauge sheet steel, and I was impressed with how easily the arc started each time. I had no problem getting full penetration, and this type of welding is quick and easy for doing autobody repairs and modifications.

Next, I welded some pieces of 12-gauge steel sheet, making butt, corner, and fillet welds, and again, the arc starts were very smooth, and I quickly found the best gun angle and travel speed to make clean, consistent welds with good penetration.

The heaviest steel I normally weld in my shop is 1/4 inch, and I made several tests with different joint configurations using this material, with consistently good results.

Miller's optional Spoolmate 100 spool gun is a perfect

accessory for this welder, enabling you to weld aluminum from 18-gauge to 1/4 inch. The machine automatically senses the spool gun when it's installed, eliminating the need for the selecting switch that was used on the previous model. I was particularly interested in seeing how the machine performed on aluminum, since I use it extensively in my shop. Again, after several tests, I found the machine worked flawlessly, with easy arc starts, and it can lay down a lot of wire in a hurry.

Take a look at the photos, which show some of the setup, and some welding I did during my testing. This machine is ideal for anyone who is looking for a compact, lightweight MIG welder that's easy to use, accommodating nearly every metal type and thickness used by a car builder, and it has arc characteristics rated as Best in Class.



8. I'm welding 12-gauge cold-rolled steel here, using the Auto-Set feature.



9. You can see what a clean, consistent weld the machine can make.



10. The heaviest material I welded is 1/4-inch steel. The machine had no problem making a clean, full-penetration weld in a single pass.



11. There is an optional spool gun that can be used with the machine, allowing it to weld aluminum.



12. The lead for the spool gun plugs in like the regular gun cable, and there is a smaller control cable that connects inside the machine.



13. The spool gun makes quick work of welding on aluminum up to 1/4-inch thick.



14. The machine weighs only 35 pounds, making it extremely easy to transport. I'm sure it will become a favorite for many car builders!

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COWBOY CADILLAC

Really, Richard Tillema's '59 Cadillac Convertible can be Seen on His Farm

By **BRIAN BRENNAN** | Photography by **RANDY LORENTZEN**

Having spent a lifetime working on a farm gives you a perspective on wide-open spaces, lots of fresh air, and large machinery. So, it shouldn't come as any surprise that Richard Tillema opted for a '59 Cadillac Series 62 'vert to be his leisure ride. Richard had wanted a '59 for some time and one day there it was on the Internet. Not long afterward the Caddy was dropped off at his doorstep—or should we say “at his barn”? A short 10 months later the once pride of Detroit design from the legendary era of fins we have what you see before you.





Scott Laitinen of Scott's Insane Chops (SIC) in Lake Havasu, Arizona (SIC is well known for building award-winning custom bikes), received the nod to build Richard a very long and low Series 62 Caddy convertible that features, among other things, a mild 2-inch chop and a monstrously powerful Cadillac CTS-V LSA supercharged engine that produces 556 hp and 551 lb-ft of torque coupled to a 6L90 trans. (This is the same engine that powered a modern Cadillac CTS-V from 0-to-60 in 3.9 seconds and a Cadillac record of 7:59:32 around the Nürburgring, making the CTS-V the fastest production sedan, manual trans equipped, in the world, and capable of 191 mph top speed.) While we don't expect this '59 Caddy drop-top to hustle around the Nürburgring in anything resembling this world record-setting speed we do figure moving down Interstate 10 between Arizona and California shouldn't be any effort whatsoever.

Chevrolet Performance offers this engine as part of its crate engine program. The LSA displaces 6.2L displacement (approximately 378 ci) but is built with powdered metal rods, forged crankshaft, and 9.1 compression ratio from hypereutectic aluminum pistons. The supercharger has a single brick intercooler in the intake with a very low profile to optimize clearance. All of this comes from pump gasoline making it very streetable. To the factory performance package a pair of Street & Performance headers with 1-7/8-inch

COWBOY CADILLAC

primary tubes are used that usher the spent gases back and through the Jet-Hot ceramic-coated 3-inch stainless steel tubing and eventually resonating out of a pair of Mega-Flow Performance mufflers. Keeping the potent V-8 cool falls to the aluminum radiator.

All of this power needs to be corralled in a rigid frame and sophisticated chassis. A phone call to the Roadster Shop produced a one-off 4x4 steel tube chassis that eventually leads to a car that is 19 feet in overall length—now that's a land yacht! The chassis is anchored in back with a Strange 9-inch rearend fitted with limited-

slip 3.73 gears, a four-link, Panhard bar, Accuair air suspension with Firestone airbags, QA1 fully adjustable shocks, and Wilwood four-piston calipers and 14-inch rotors. The front IFS is based on Corvette (C6) spindles with Roadster Shop upper and lower control arms, Accuair air suspension with Firestone 'bags, and QA1 adjustable shocks. The Wilwood six-piston calipers and, again, 14-inch rotors are pressed into service through the Wilwood master cylinder and Caddy pedal assembly. The steering is handled through a power Flaming River rack-and-pinion run through one of their steering



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columns topped with a Colorado Custom leather-wrapped wheel. More corner eye candy can be seen in the one-off Colorado Custom wheels modeled after the '59 Caddy Sabre bladed rims that measure 20x10 and 20x13 and then wrapped in Michelin Pilot run-flat technology, 285/30R20 and 335/25R20.

SIC handled the build and during the process they took the Series 62 drop-top and cut 2 inches from the soft top while shaving door handles and locks. The front and rear trim, bumpers, and factory lighting were retained. SIC also handled the bodywork and following paintwork in Axalta (formerly DuPont) GM white, while the brightwork was handled by Tim Blair of California Polishing.

On a hot rod this big and one that is a drop-top you can bet the interior is going to stand out—and stand out it does. Redone in an eye-popping red the factory dash is outfitted with a Racepak display dash. Ron Mangus Custom Hot Rod Interiors stitched over the stock full-power Caddy buckets in red leather and then followed with matching red German square-weave carpeting. Mangus also made the custom door and kick panels as well as the custom center waterfall console that houses the stereo speakers, power window, and air suspension controls.

If you're going to work on a farm all day you might as well have a spacious open air hot rod just like Richard has with his '59 Cadillac convertible. **SR**



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◆ Bob and LeAnne Kleiner travel the country in their unique, home-built '54 Kaiser Manhattan.

From the Box to the Boulevard

Assembling a Chevy 502 Crate Motor

By Ron Ceridono | Photography by Brian Brennan

➤ Since its introduction in 1965 the Chevrolet big-block V-8 has been a popular performance powerplant. Over the years the engine's design has been refined, the displacement has grown, and today one of the most potent versions ever made is offered in crate form—the 502ci, 502hp big-block, appropriately cataloged as the ZZ 502.

Years ago Bob Kleiner found a 454 big-block Chevy was the perfect candidate to power his '54 Kaiser Manhattan. The engine performed well for many miles, but it was beginning to show signs of fatigue. As he and wife LeAnne travel extensively in their rare two-door, the decision was made not to rebuild what was there but replace it with a fresh ZZ 502/502. The new engine came in unassembled long-block form (all the rotating and reciprocation parts were inside the block, the heads were included but not installed, and carburetion, ignition, exhaust, and water pump were not included).

While crate engines are factory fresh, there's more to installation than pulling them out of the box and dropping them in place, particularly when dealing with a partial assembly. As Kleiner is experienced in such things he knew the first order of business was to thoroughly clean all the parts before assembly and installation.

With the engine mounted on a stand sturdy enough to support the big-block's heft the heads were installed. GM recommends lubricating the headbolt threads with oil

(sealer is not required because none of the holes penetrate the water jackets).

After tightening the heads the pushrods and rocker arms are cleaned, pre-lubed, installed, and adjusted. With



1. By the time we caught up with the Kleiners the new 502 had clicked off 8,500 trouble-free miles.

Source It

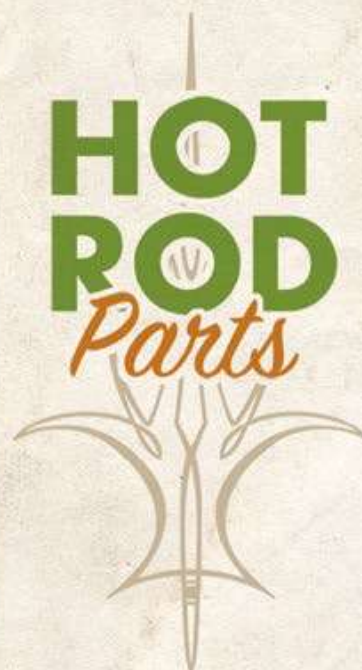
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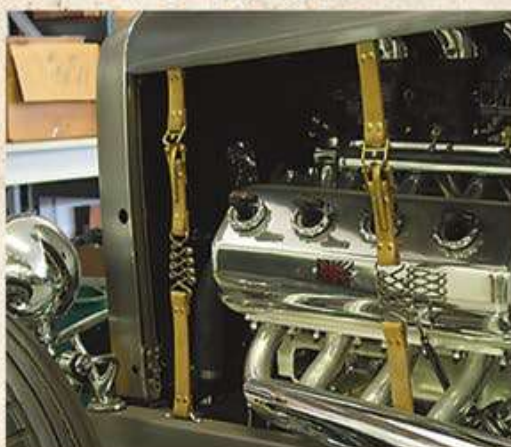
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the number one piston top dead center in firing position (the timing marks indicate TDC and both the number one cylinders valves are closed) intake valves 1, 2, 5, and 7, and exhaust valves 1, 3, 4, and 8 can be adjusted. After rotating the crankshaft one complete turn, intake valves 3, 4, 6, and 8 and exhaust valves 2, 5, 6, and 7 can be adjusted. Adjustments are made by tightening the rocker arm nut to remove any lash (soon as the pushrod can't be easily turned by two fingers) then the nuts are tightened an additional eighth turn.

Installing the intake manifold, water pump, motor mounts, and the remainder of the external components is easy enough.

A unique feature of the ZZ 502 oiling system is that it has two oil pressure bypass valves in the block, one for the oil filter and the other is for the GM oil cooler—both are rated at 11 psi. If an aftermarket oil cooler or remote filter is used Chevrolet Performance advises that the oil filter bypass should be changed to 30-pound valve, GM PN 25161284. The bypass for the oil cooler only functions if a GM oil cooler with an oil diverter is used. If the oil cooler ports in the block are plugged the bypass can be removed or left in place (however, there is slightly less restriction without it, which may boost oil pressure slightly).

One of the most important steps when installing a new



2. The new Chevrolet Performance 502 has a standard deck height, cast-iron block with a forged crank spinning in four-bolt mains.



3. This engine came with an externally balanced 14-inch automatic transmission flexplate. For manual transmission applications flywheel PN 14096987 is used.



4. With 4.47-inch forged pistons the compression ratio is a reasonable 8.75:1 when used with 118cc chambers cast-iron heads, or 9.6:1 with 110cc chamber aluminum heads. The bottom end includes 4340 steel connecting rods with 7/16-inch bolts.



5. Opening the valves is a hydraulic roller cam with 0.527-inch lift and duration of 244 degrees on the intake with 0.544-inch lift and 234 degrees of duration on the exhaust (duration measured at 0.050-inch lift).



6. Kleiner opted for the aluminum, oval port cylinder heads (PN 12363390). They have 110cc chambers and the intake valves measure 2.250 inches, exhausts are 1.880.



7. To ensure a good seal, the gasket surfaces of the block and heads must be perfectly clean and the gaskets must be oriented properly. Note the difference in the water holes at each end of the gasket.



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engine is the break-in procedure and for this Chevrolet Performance specifies the use of non-synthetic, 5W-30 motor oil. With the distributor removed, the engine is primed by spinning the oil pump clockwise with a priming tool (Chevrolet Performance PN 141-955) in a 1/2-inch drill motor. As the oil pump is spinning a helper should be enlisted to turn the crankshaft clockwise to ensure oil is delivered throughout the engine.

Once the engine is primed it's time to make some noise. With the distributor installed initial timing should be set at 10 degrees before top dead center, that should result in the suggested 32 degrees of total advance at 4,000 rpm. During the break-in procedure the engine should be put under varying loads for the first 30 miles while avoiding wide-open

throttle operation. Then it's recommended that five or six half-throttle pulls to 4,000 rpm and back to idle be made followed by two or three full throttle pulls to 4,000 rpm. After all that the oil and filter should be changed (again using non-synthetic 5W-30).

For the next 500 miles the engine can be used normally, however avoid spinning it at max rpm and long periods of heavy loads. At this point the engine should be broken in and running perfectly so the final step is to re-torque the heads and check all the gaskets and hoses for any signs of leakage. Finally, change to the oil of your choice and get ready to enjoy 502 ci, 502 hp, and 567 lb-ft of torque of big-block Chevrolet goodness. We can guarantee Bob and LeAnne are.



8. There are three lengths of head bolts—4, 5, and 6 inches. The 2-inch bolts are used in the holes along the bottom edge of the head; the 5-inch bolts are used in the holes near the exhaust ports and the 4-inch bolts in the remaining holes.



9. Head bolts are torqued in three increments of roughly 25 lb-ft each. The final tightening specification for the 2-inch bolts is 65 lb-ft; the 4- and 5-inch bolts tightened to 75 lb-ft. A re-torque is recommended after the initial warm-up and cool-down.



10. Push rods are mild steel that has been case hardened for use with guideplates.



11. The ZZ 502 comes with Chevrolet's tried-and-true, stamped steel rocker arms. The production-style rockers provide a 1.7:1 ratio.



12. For the reduced friction they offer Kleiner opted for roller tip and trunnion rockers from Chevrolet Performance. Like the stamped steel variety, the ratio is 1.7:1.



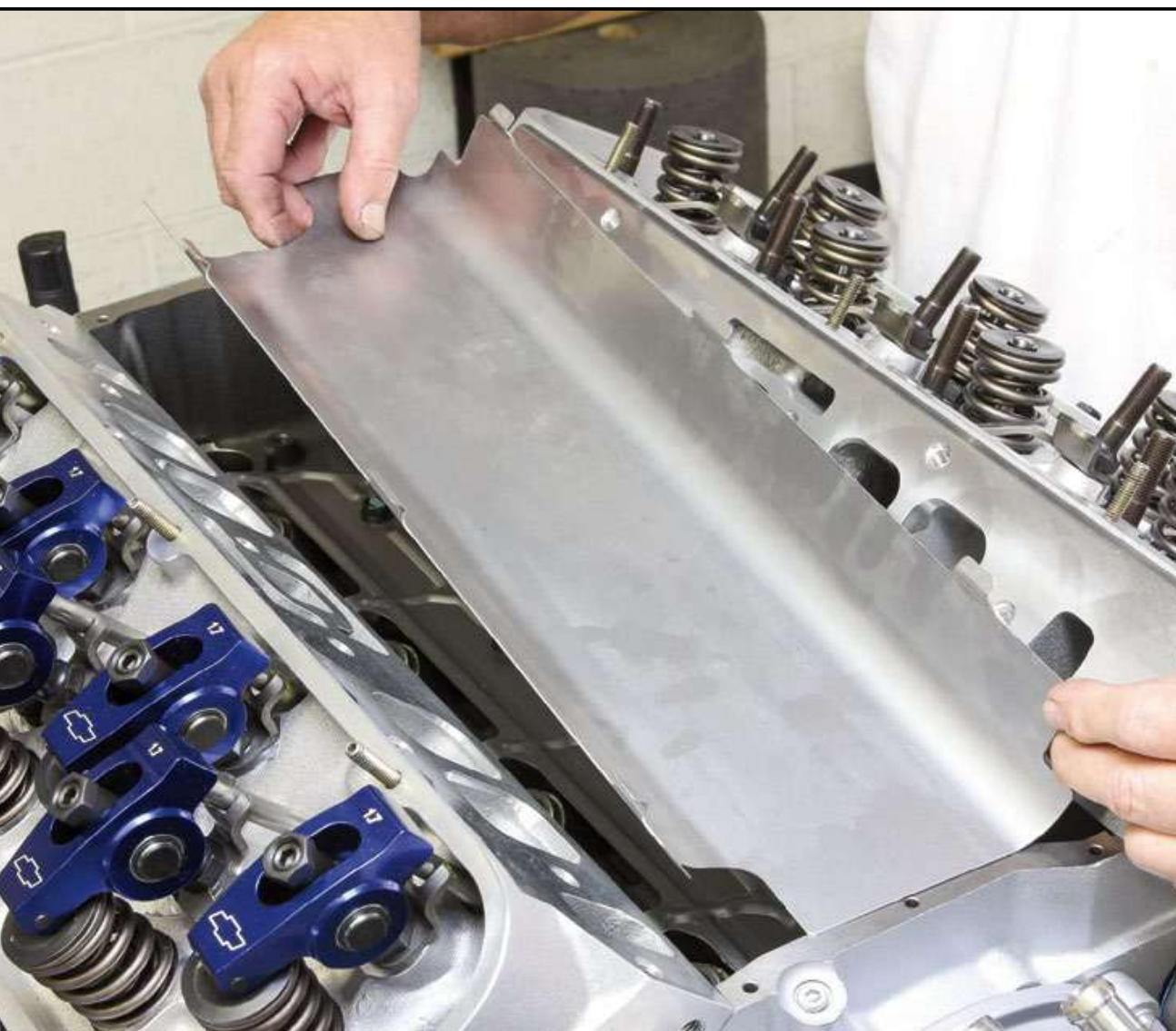
13. Bolted to the block in the valley is the sheetmetal "spider" that guides the lifters, keeping the rollers aligned with the cam lobes. Note the heat riser passage between the center intake ports.

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14. This sheetmetal baffle is installed to keep hot oil off the bottom of the intake manifold.

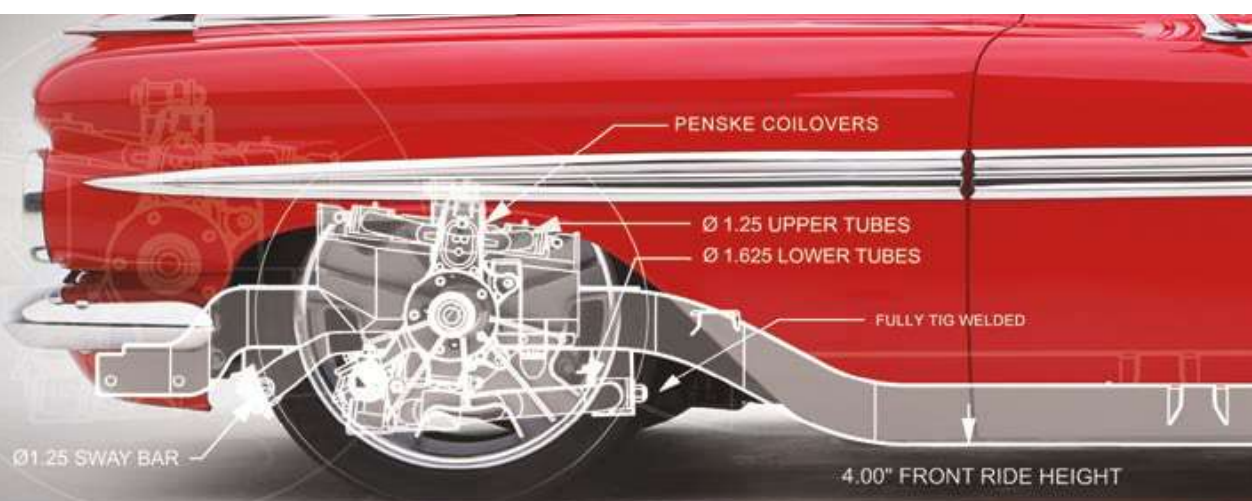


15. Before the intake manifold was installed the heat riser passages in the gaskets were closed off with the optional plugs.



16. To keep the engine compact as possible a short Edelbrock aluminum water pump was installed.

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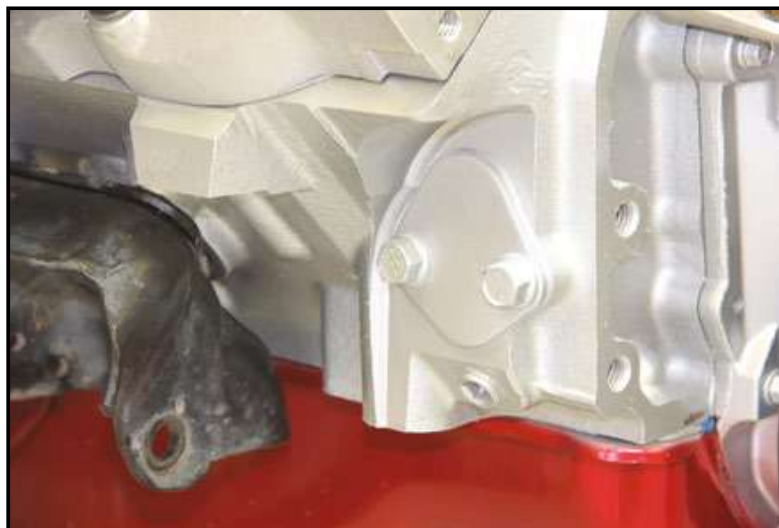
17. Included in the ZZ 502 package is a harmonic damper counterweighted for externally balanced applications and the corresponding pointer.



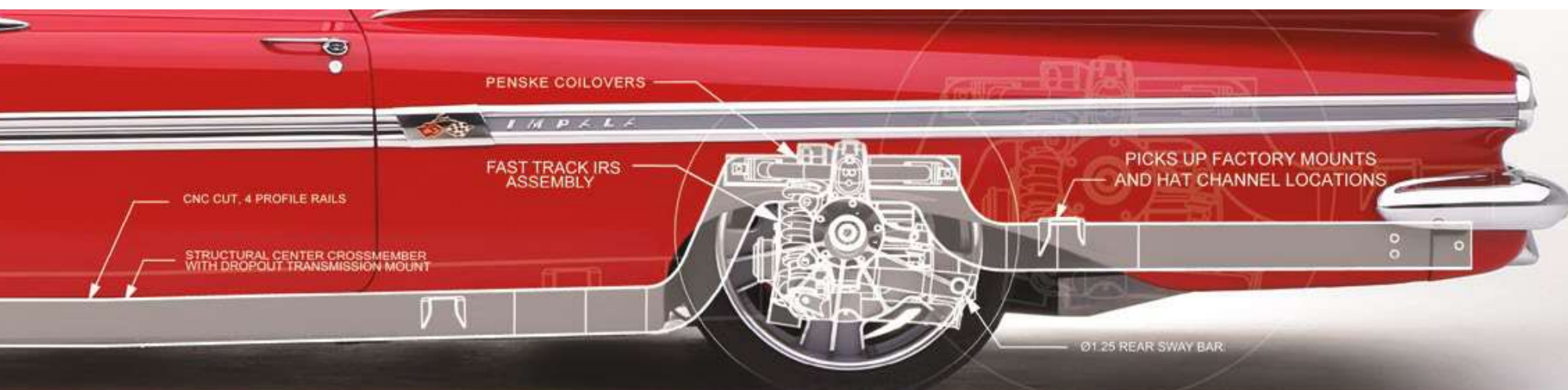
18. This Chevrolet Performance screw kit has the shouldered cap screws and washers to secure the intake manifold.



19. For an intake manifold Bob chose a square-flange, single four-barrel, dual plane from Chevrolet Performance.



20. Like the early style Mark IV blocks, the latest version has a fuel pump mounting pad the Gen V versions lacked.



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21. For reliable performance Kleiner turned to MSD for an Atomic fuel injection the corresponding ignition system.



23. The engine mount brackets go with the mounts that are on the Camaro subframe under the Kaiser. The headers were massaged for the earlier big-block installation.



22. There are two versions of rocker covers, the competition style (top) and the 502 Bow Tie style, Kleiner went with the later. Before they were installed the rocker arm assemblies were bathed in oil.



24. After the break-in period the engine was equipped with a fresh AMSOIL INC. filter and synthetic AMSOIL INC. 5W-30.

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25. All buttoned up with somewhere to go. The new ZZ 502 was slipped in place and shortly after the Kaiser was on the *Hot Rod Power Tour* and the *STREET RODDER* Road Tour.

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feature

TRADITIONALLY SPEAKING

Bill Ewing's '32 Ford Five-Window

By ERIC GEISERT | Photography by THE AUTHOR



You know you have a love for hot rods when, after not only squirreling-away a Deuce five-window for 30 years, you finally decide to build the car with everything you've learned in your lifetime.

Bill Ewing, a seventies-ish retired plumber living in Tucson, Arizona, knew this particular Deuce coupe has been in the Tucson area for the past five decades, but he's only owned it for the 30 years, moving it through the years between different storage facilities and his grandmother's carport. Ewing has been into hot rodding since his teens, which is when one of his friends bought a perfect Deuce five-window.

A few years later it got sold to another friend, who installed a Mustang powerplant, but he never took it any further. It went up for sale in the '70s for \$10,000 (a lot of money for a Deuce in the '70s!) and Bill thought it was a good opportunity, so he bought it, always intending to go through it. As it turned out, life had to run its course before he was able to devote the time, energy,

and money to build the car the way he wanted to.

Having raced cars for more than 50 years, Bill's approach to his project was to use a lot of race-inspired pieces and, if he couldn't find what he wanted, then he made his own parts to fit the bill. And everywhere you look on this car, you find special one-off parts as well as a unique way of incorporating them into the project.

Bill started the build with the original set of unboxed '32 rails,



though the K-member and front crossmember were slightly modified before being bolted back into the original rivet holes. Plus he made his own rear crossmember to better accommodate the 1915 Model T spring he wanted to use.

Quick-change rearends are popular with hot rodders, but you don't see too many Cyclone quickies, as Bill believes they only made less than 100 or so of them back in the day. Bill retapered the original Ford axles after narrowing them a total of 3 inches

so the wheels would sit in the right place in the fenderwells.

Original (very rare and very expensive) Kinmont brakes are used fore and aft, with the front suspension using a Super Bell tube axle and early Ford spindles with a bolt-on steering arm. Bill modified the '39 Ford pedal assembly to work with the '40 Ford-type brake master cylinder, and adapted it to mount to the '32 K-member. Steering is accomplished with a Schroeder cowl-mounted box, to

which Bill added his own quick-release four-spoke steering wheel. Bill also made the column mount, which resembles a two-bolt crank main. Each corner of the car uses Coker/Excelsior Comp V tires (600-16 and 750-16) and they wrap 16x6 magnesium Halibrand six-pin knock-off wheels.

For an engine Bill used a 255 Flattie that had been in his roadster, but he wanted something slightly different for the coupe. He started with the '38-48 59AB Ford block, which has a

TRADITIONALLY SPEAKING

4-inch crank, a Crower camshaft, and Jahns pistons. Up top he bolted on a set of original Ardun heads (equipped with modified Buick lifters) that are fed by a quartet of Stromberg 81 carbs (usually found on V8-60 engines). Bill made his own throttle linkage along with safety-wiring all the bolts used with the hard line and fittings. He also made aluminum pulleys for the motor (relying on Mattson's for the custom radiator) and fab'd his own fan as well.

A Powermaster alternator (that looks like a vintage generator) and a Vertex magneto (with cloth-covered wires tied with wax string) supply the engine's electrical needs, and Bill created his own headers and exhaust system for the coupe. For a transmission, Bill used an X-shifter, which was sold by Offenhauser back in the '50s. It uses an Offenhauser aluminum adapter to mount to a Flathead, a lightened Ford flywheel, a modified '37 Chevy shifter, Chevy internals, and bolts to a torque tube that was massaged to work by the owner.

In keeping with the traditional theme, much of the car's exterior was left unaltered. The roofline is stock, the radiator shell not filled, and he still has the original '32 hood, though he doesn't run it (would you with this motor?). He also still has the fenders that came with the car, and says they're as perfect as this body was. The car needed no bodywork before paint, and a buddy of Bill's, Frank Johnson, sprayed the car its light gray color, and Ray Leon at Tucson's Royal Plating did all the chrome.

Inside the car you'll not only find the car's original wood, but also a stock dash and an engine-turned gauge cluster filled with just three gauges: an Auburn speedo and two refaced Stewart-Warner gauges for the water and oil pressure. There are no amplifiers or stereo, and Bill says he gets A/C by cranking open the cowl vent and opening the windshield.

Hot Rod Interiors by Glenn Kramer in Glendale, Arizona, got the call to rebuild the original '32 bench seat, to which he added gray leather in the original-style pattern along with



black and gray German square-weave carpet (which is removable to view the painted original floor).

There are so many homemade parts on this car it's hard to find them all—everywhere you look you'll find Bill's personal touch. From the headlight bar to the ratchet-derived Pitman

arm, from the steering column mount to the safety wire securing nearly every bolt, this coupe truly is one of a kind. The car runs Alaska plates as his family has a summer home there, and he's done nothing but drive it since its completion, which sounds like a pretty good plan to us! **SR**



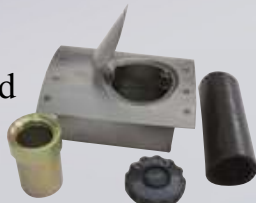


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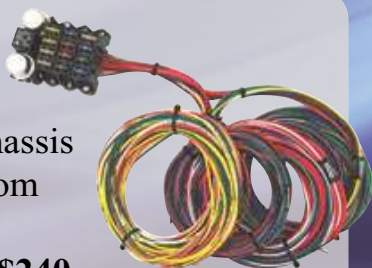
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Galaxie 5.0

Not Quite OEM!

By Kev Elliott | Photography by the Author and Brian Brennan

➤ The '62-64 Galaxie 500XL was the first big-performance Ford with engine options all the way up to the legendary 427 in the factory lightweight cars in 1964, of which only 25 were built. Hot Rods By Dean proprietor, Dean Livermore, thought the new Ford Coyote engine would be a great fit in one of these big cars, and set about looking for one, the search unbelievably turning up a one-owner example just a few miles from his shop in Phoenix.

From the very beginning the plan was to build the car with a factory appearance, as if the Coyote was an original option, which is why you'll find no polished parts under the hood, factory clips on rubber hoses where possible, and the EFI, ignition and trans modules hidden inside a box.

The Galaxie may have a large engine bay, but the Coyote is a larger engine, its location limited by the use of the 8-Stack injection, which had to fit under the hood, and retain a stock firewall. This meant some modifications to the suspension arms, mounts, crossmember, and steering assembly. Even then, it was a tight fit, and installing the headers was more than a little challenging.

A Hughes Performance 4L80E was chosen, and being a GM transmission, required adapting to the Ford motor. This was hooked to the 9-inch rear via a Dynotech driveshaft. With fresh paint, six-piston Wilwood brakes all around, and a restored interior, Livermore racked up 1,000 test miles then hit the road with his son on *Hot Rod* magazine's Power Tour.

This month we'll show you what it took to shoehorn the Coyote lump into place, how it was hooked to the GM trans, and how the Vintage Air Front Runner system was mounted to the engine.



1. What you don't see is the numerous trial fitments of the engine and trans, but the final result was the upper A-arms and mounting brackets required trimming for clearance.

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2. Jumping ahead, here's just how tight a fit the Coyote engine was, even with the A-arms and brackets trimmed.

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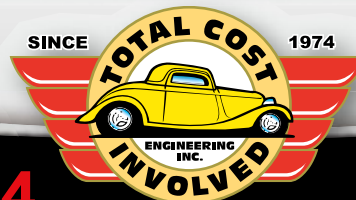
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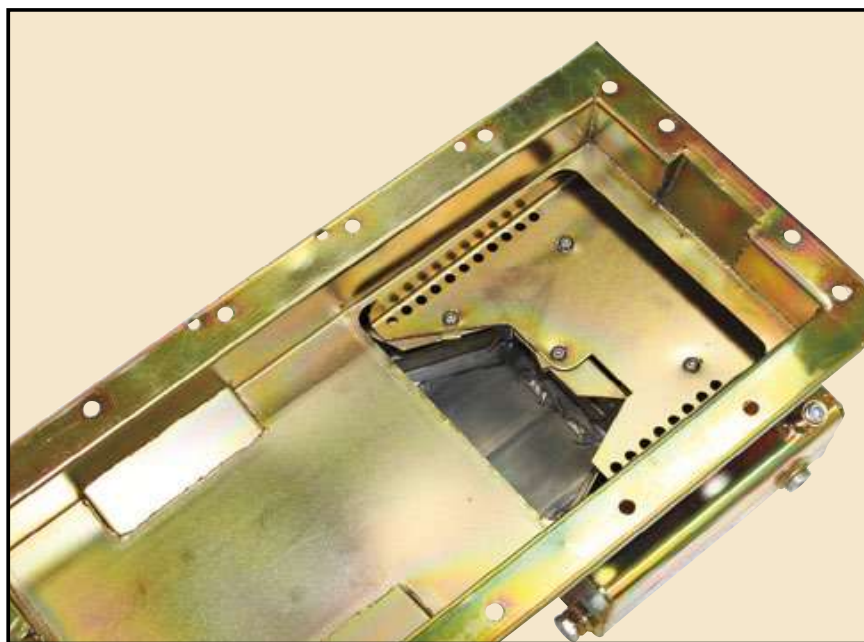
3. Similarly, the crossmember was cleared by 1 inch, and engine mount brackets welded in place.



4. A new tubular trans crossmember was fabricated, mounting to the original brackets on the framrails.



5. The Coyote engine comes with a rear sump oil pan, which interfered with the crossmember, so this front sump version from Canton Racing Products was ordered.



6. Canton's new 15-738 Ford 5.0 Coyote oil pan is designed with a "T" front sump for extra capacity. It features a diamond-shaped road race baffle assembly with four trap doors and a removable Windage/anti-slosh baffle.



7. Canton also offers a pickup specifically for its pan, as well as a dipstick, though a Lokar version was used in this application.



8. This clearly shows the difference between the stock pan and the Canton front sump pan.



9. As well as illustrating the position of the crankshaft position sensor, here you can see the stock pilot bearing.



10. The stock bearing was removed and replaced with this solid bush for use with the 4L80E torque converter. This makes up the difference in distance between the crank and converter, as the nose of the latter locates in the bush.



11. Hughes Performance supplied the 4L80E, the SFI spec 30.1 bellhousing, and adapter to mate it to the Ford engine.



12. The adapter was bolted to the trans then the bellhousing could be installed.

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13. A new starter index plate was installed before the flexplate went on.



14. Here's the new flexplate and pilot bush.



15. Supplied by Hughes with the trans, the converter is an 11-inch 2500 stall speed billet converter.



16. ARP fasteners were used throughout these for the flexplate.



17. The completed trans assembly, ready for installation.



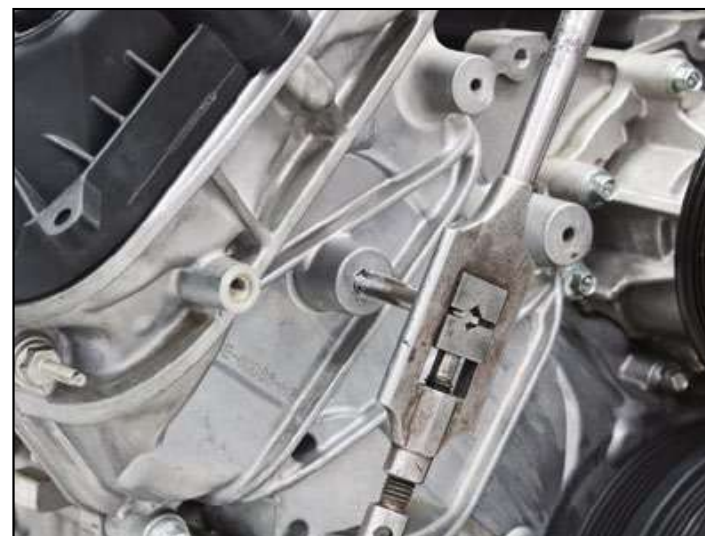
18. Here's the bracketry for the Vintage Air Front Runner A/C compressor and power steering components. Some holes on the block, which the lower bracket uses for installation, are already tapped; others for the upper bracket require some work.



19. With a "Q" size drill bit in the drill guide, 1 inch was left protruding, and the bit taped off to prevent the guide passing this point.



20. The upper bracket was bolted to the lower, already installed, then with the drill guide inserted 1 inch, the mounting boss was drilled 1-inch deep. The same was done with the upper mount hole to the right.



21. With the brackets removed, the bosses were tapped using a 10mm x 1.5 tap.



22. The brackets replaced, the mounting bolts were installed. The one on the head also mounts an idler pulley.



23. The power steering pump also bolts to the upper bracket, the pulley installed on the rear using a pulley installer, not a press.



24. The belt tensioner is installed, a length of 1/4-inch rod used to lock it in place while the belt, power steering pump, upper bracket, and compressor are installed. The latter mounts above and behind the tensioner.



25. With all the new parts installed—Vintage Air A/C, Canton oil pan, and Lokar dipstick, the engine was ready for final installation. The trans was bolted up once the engine was in the car, as there was no room to drop them in as an assembly.

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The 2015 ARP/STREET RODDER Road Tour Sunliner

Starlite Rod & Kustom Puts Color on the Sunliner

By Kev Elliott | Photography by Tim Bernsau

➡ **Body and paint.** Words to strike fear into almost every hot rodder. Either it means weeks of backbreaking work or a large bill! If you never realized just what goes into a top-notch paintjob, you'll find the following of interest. Following all the fabrication on our Sunliner at Hollywood Hot Rods, Starlite Rod & Kustom was tasked with getting the body arrow straight and laying on the color, Blue Flame (code SZ) selected from Ford's 2011 palette. Actually that should read "colors" as Sterling Gray (code UJ) from the same source was used for the back panel inlay and detailing.



1. The modified body, doors, hood, trunklid, dash, and garnish moldings were trucked over to AFCO in Gardena, CA, where Javier media-blasted everything, inside and out, top and bottom.



2. Note the door apertures had been braced prior to the body being removed from the frame. Once blasted and cleaned of debris, the guys at AFCO sprayed the inside and underside in matte black epoxy.

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3. While Hollywood Hot Rods had made numerous modifications to the body, there were some dings and accident damage to be taken care of as well. With the car back at Starlite, Jose concentrated on the driver side. A straight edge (or in this case a bubble level) was used to check progress.



4. The damage on the passenger side extended through the whole quarter-panel. Julio started by using a long block with 80-grit to determine where the high spots were.



5. One of a bodyman's greatest tools are his hands; here Julio feels the high and low spots using his palm, not just his fingers.



6. 3M Platinum body filler was used throughout the job, along with 3M Green Corps Roloc grinding discs and sandpaper rolls.

PPG's waterborne Envirobase system was used for the topcoats and surfacer, matched with the company's epoxy primer for a solid foundation. 3M provided all the body filler, sandpaper, and consumables. The ideal base for any bodywork is bare metal, so the body was separated from the frame and sent to AFco for media blasting prior to any work. The same company handled the powdercoating on the chassis at this time.

Now, follow along as the Starlite crew straightens and paint the Sunliner. Next month we'll show how the paint was color sanded and polished.



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7. With a spread of filler over the entire panel after any necessary heat shrinking hammer and dolly work, Julio again used the longboard to block-sand the filler.



8. Alex worked on the doors, here using an electric stud gun to pull out an inaccessible dent. This tool heats a metal stud, essentially welding it to the doorskin.



9. Once the studs are in place, a slide hammer was used on the stud to pull the panel back into shape.



10. Again, a straightedge was used to help determine progress.



11. With the body back on the frame, the front clip, hood, and trunklid were all bolted back in place to ensure correct alignment and to make modifications as necessary.



12. Once their alignment and fit was determined to be perfect, the doors were removed again and placed on stands to make bodywork easier.



13. The bubble level came out once again to check the lower edge of the trunklid for straightness.



14. Alex used a hammer and dolly to perfectly straighten the lip of the trunklid.



15. For primer and paint, Starlite Rod & Kustom rents a local paint booth, which, though it costs a little in time and transport, sure beats battling with the complexities of legally installing one, especially in Southern California where it's virtually impossible!



16. The interior was masked using plastic sheeting. Note the wheelhousings and rocker panels are masked down to the floor to prevent overspray getting under the car and onto the frame and running gear.



17. PPG DP50LV epoxy primer was used to prime the whole car. The Envirobase surfacer was used at a later stage, before the final color coats.



18. The DP401LV is the hardener for the epoxy primer, while the D8767 is the reducer, or thinner.



19. The primer was mixed as per PPG's instructions; 2:1:1, which breaks down as two parts primer, one part hardener, and one part reducer.

20. Here's why paint should always be mixed in a cup and not in the gun (quite apart from the fact modern gravity-fed guns have the bowl on top, making it hard to properly mix the components); once mixed, it should always be poured into the gun through a strainer, eliminating lumps or debris from blocking the gun.





21. One of the quickest steps in the whole process makes the biggest difference! With the entire body in primer, it suddenly starts to look like progress is being made.



22. Back at Starlite, a guidecoat was applied over the whole body before block sanding the primer began.



23. Guidecoat was applied between each sanding stage.



24. The entire car was blocked with 150-grit, then 220, then 320. After that, a powder guidecoat was applied and the car wet-sanded with 600-grit.



25. A flexible long block was used to sand the body. Not only does this follow gentle curves, such as front to rear of a quarter-panel, but also tighter curves, such as vertically.

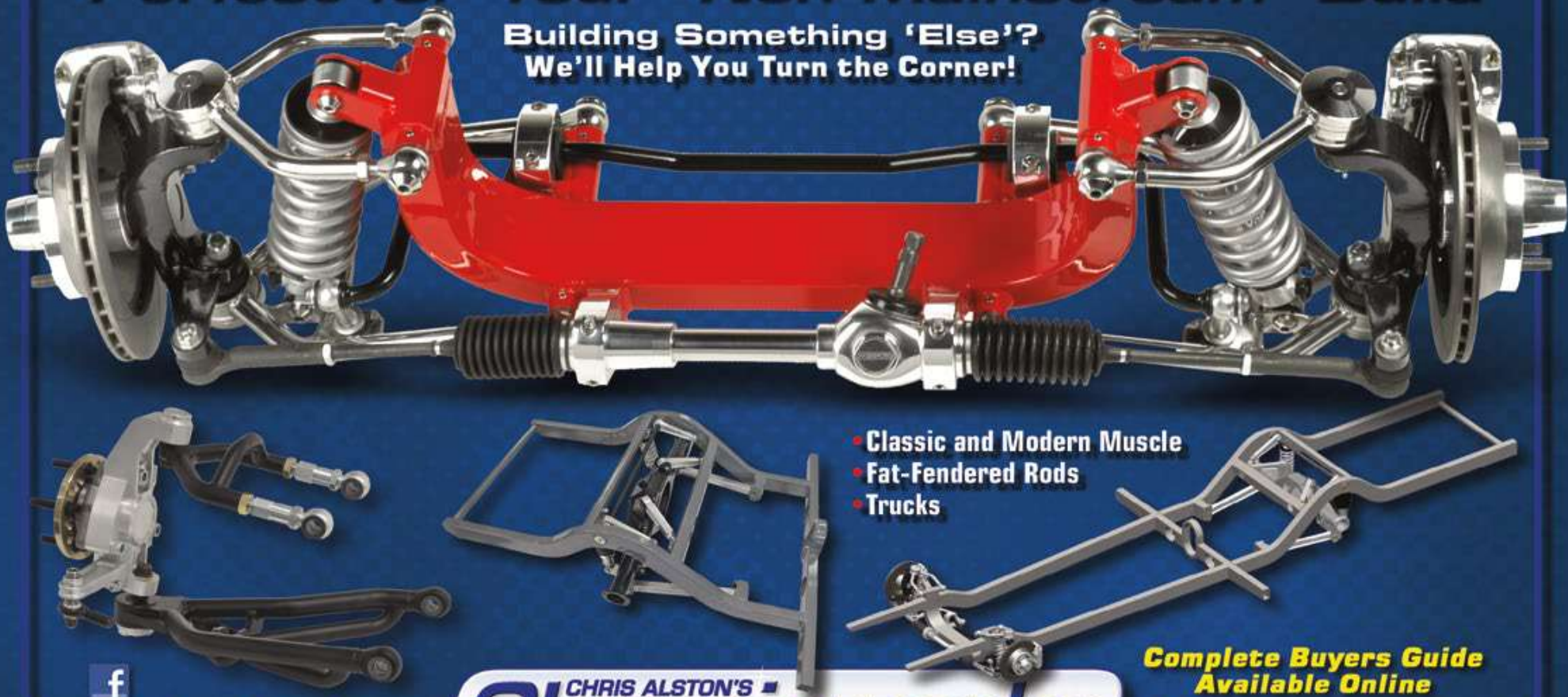


26. Notice that although the primer has been sanded through to the filler on the left, guidecoat is still visible in a couple of areas immediately to the right (indicated); these are low spots.

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27. No matter how well the car is blocked at the filler stage, there will almost always be “rub throughs” or low spots that require a little more filler. Filler can be applied over epoxy primer. The rub throughs will be spot-primed and blocked again prior to paint.



28. Once again the car was disassembled. A two-post lift makes removing the body from the chassis relatively simple. The front clip came off in one piece and was bolted to a dolly, as was the bodyshell.



29. There's more to prepping and painting a car than just the body, doors, trunk, and hood. Here are just some of the parts that can take as long as the main body to prep.



30. With the body ready for spot priming and then off to the spray booth, the chassis was stripped to a bare frame and delivered to AFCO for powdercoating. Here all threaded holes are masked.



31. Powdercoat is an odd thing to watch being applied if you're used to paint. It goes on with a matte finish ...



32. ... but comes out the oven smooth and shiny, or satin if that's the finish you specified.



33. The cowl panel, doors, and assorted parts and pieces were hung from a rack in the spray booth, to be painted at the same time as the bodyshell. Are you getting an idea of how long a quality paintjob takes yet?



34. A little more critical than the primer stage, paper was used to mask around the edges of the interior. Dried basecoat has a tendency to flake off plastic when the clearcoat is being applied. Not ideal.



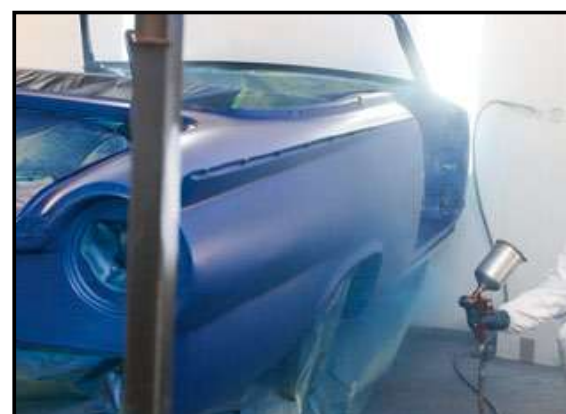
35. Intended for use with waterborne paints, Jack likes to use this fan-style blower when prepping panels, as it disperses any debris more gently and way better than a regular blowgun.



36. Using a lint-free cloth, everything to be painted was wiped down with a pre-paint prep solution to remove any dirt or greasy residue. Even bare hands can leave a residue. Finally, everything was wiped over with a tack rag to remove any remaining particles or dust.



37. The PPG Envirobase basecoat and clearcoat. Envirobase is a waterborne product. Ford colors from 2011 were chosen for both the main body and the engine bay and rear panel accent. They are Blue Flame (code SZ) and Sterling Gray (code UJ).



38. Correctly suited, booted, and with respirator, gloves, and eye protection, Jack sprayed the sealer, followed wet-on-wet by the basecoat and clearcoat.



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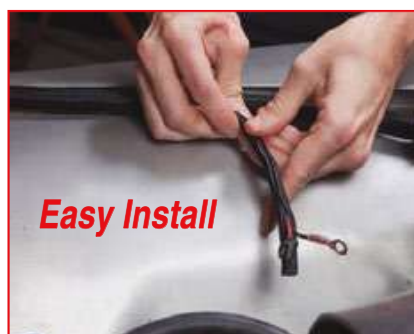


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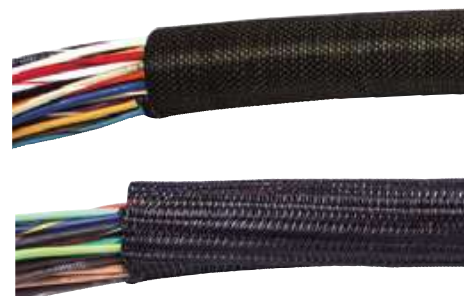


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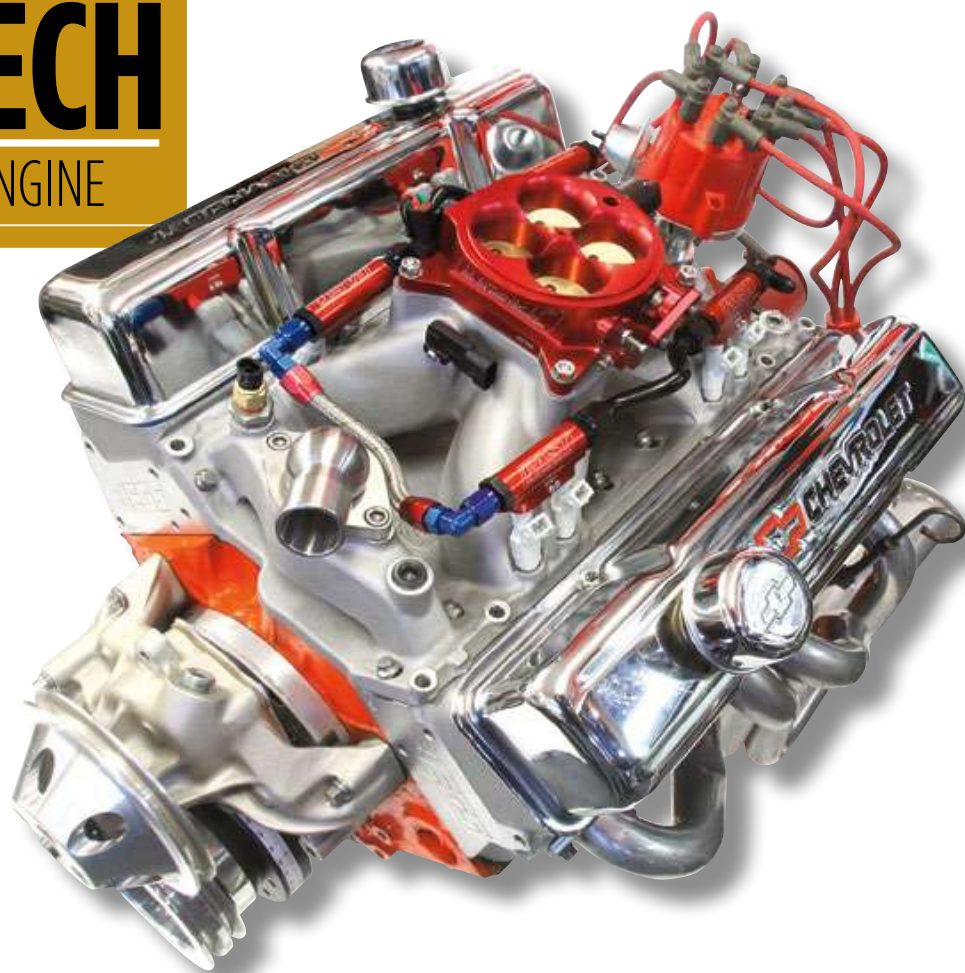
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Great Crate, Part V

More Compression, Cam, and Heads Equals 480 hp

By Jeff Smith | Photography by the Author

✚ “More power, Scotty!” Captain Kirk beseeching his chief engineer to once again pull his buns out of an intergalactic tight spot has become nearly cliché. That line has also been the battle cry of hot rodders when the first cars quickly became race cars over 100 years ago. We haven’t progressed to dilithium crystals yet so we’ll settle for messing with small-block Chevys. A few months back we started with a basic Chevrolet Performance 290hp version small-block Chevy crate engine. Along the way we added Edelbrock Performer rpm heads and a COMP roller cam, but we still only made 431 hp—and in today’s world that just isn’t enough. We’ve also installed the new Holley Tri-Power and that gave us power and the much sought after “traditional” look.

There are many well-documented ways to increase power. The easiest way is to just bolt on a supercharger, a pinwheel masquerading as a turbocharger, or even a load of nitrous. These are all really good ideas—and way too easy. We will try it the old fashioned way; we’ll earn it normally aspirated.

Along the N.A. path, the approaches are again straightforward; our crate engine needs more compression, good breathing, and a bigger cam with some attention paid to basic physics. The formula for horsepower is horsepower = torque x rpm ÷ 5,252. If you study that for a second or two, you quickly discover that if we can make the same torque at a higher engine speed, we can make more horsepower because the rpm number in the equation will

become larger while the divisor (5,252) remains the same.

Let’s take an example. In our previous Great Crate III test, the engine made 424 lb-ft (339 hp) at 4,200 rpm. If all we did was make the same torque but extend the peak torque rpm point 1,000 rpm higher, all of a sudden we’re making more horsepower (420 hp) and we’re just talking about the power at peak torque. If we predict that our engine will have a power band of 1,500 rpm then extending the power band from 5,200 to 6,700 rpm, we now have the opportunity to make a bunch more horsepower. A longer duration cam will optimize breathing at a higher engine speed, which will push the peak horsepower rpm point higher, assuming the heads can supply enough air. This demands matching

supporting component, like better breathing, a higher flow induction system, and more compression, which will squeeze harder what is captured in the cylinders.

Starting with the short block, it was time for better pistons. We disassembled our Great Crate and added a set of SRP flattop forged pistons and attached them to a set of 6.0-inch SCAT I-beam rods while retaining our cast-iron crankshaft. We also dumped the OE aluminum main and rod bearings and replaced them with higher load capacity Speed-Pro tri-layer bearings. This is a good idea anytime you expect to exceed 450 hp on a stock short-block because the aluminum bearings are not up to the task. The flattop pistons produce not only a much stronger 10.2:1

compression ratio, but they are much stronger than the stock castings and feature thinner, 1/16-inch rings that reduce some friction.

We also decided to try a set of affordable JEGS 195cc intake port heads with this combination. While these intake ports are on the conservative side, we liked the idea of a high port velocity for a street engine as opposed to a 210cc port where the velocity would be slower. All of this is intended to combine with the bump in cam timing. The previous cam sported 236/242 degrees of duration at 0.050, so we just bumped it one size up to 242/248 with a commensurate lift increase.

With the engine assembled and the cam degreed, the last question was induction. With a camshaft this size, we knew that idle quality and street driveability would be compromised because this was only a 355ci engine. We expected the idle vacuum to be around 10 inches (it turned out to be 9.5 inches at 950 rpm). From previous experience with big cams on the street, we knew going in the engine would demand a rich air/fuel mixture at idle and part-throttle from the carburetor in order to maintain any kind of decent driveability.

One way to allow the engine to run leaner would be to convert to electronic fuel injection. While we could have used any one of the many throttle-body fuel injection systems, we decided instead to try a multi-point system. Fuel Air Spark Technology (FAST) offers a complete manifold and electronics package that looked promising. Among the most attractive aspects was that we could use the RHS single-plane intake with its eight injectors and control all the electronic goodies with a multi-point version of the EZ-EFI 2.0 system. The EZ-EFI 2.0 is best known for its eight-injector throttle body that looks like a carburetor. What is less well known is that FAST makes this same self-learning technology available to control a multi-point fuel injection system.

What makes this system worth the investment is that with the manifold installed and the harness connected, it takes barely two or three minutes to enter the specific data into the handheld tuner. This includes specifying the idle, cruise, and wide-open throttle



1. We disassembled our 290hp Chevrolet Performance crate engine and bolted in a set of JE forged flattop pistons and stronger Scat connecting rods both to improve durability and to pump the compression to 10.2:1.

(WOT) air/fuel ratios, the cruise and WOT ignition timing you desire, and the ECU does the rest. There's no complex tuning knowledge required. The hardest part is setting up the FAST Dual-Sync distributor for the proper rotor phasing, but that's easy if you follow the instructions.

After bolting the engine to Westech's SuperFlow dyno, the engine fired immediately and after the engine was fully warmed up our Great Crate immediately produced 482 hp with a commanded 12.7:1 air/fuel ratio. We changed the air/fuel ratio leaner to

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2. The biggest effect on power came from the next step COMP hydraulic roller. This cam only added 6 degrees of intake and exhaust duration but it was worth a bunch of power by pushing the torque peak higher. We also added better springs and tool steel retainers to make sure the valvetrain could handle the rpm.



3. After bolting in the new pistons and rods, we added the cam and degreed it with the intake centerline method.



4. We also wanted to try the new 195cc intake port JEGS heads, although the previous Edelbrock Performer RPM heads would certainly work nearly as well.

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12.9:1 with a simple couple of clicks on the handheld unit and the power jumped to 488 hp at 6,200 rpm. After a few tries at various total timing settings, we came back to the magic 36-degree number and our best peak power remained at 488 hp with 440 lb-ft of torque at 5,200 rpm. If it sounds like the system was near-best right out of the gate—you'd be correct.

Next, we plotted the difference in power curves between our Part V parts combination and Great Crate Part III with the single four-barrel dual plane intake, the Edelbrock Performer RPM heads, and the slightly smaller hydraulic roller cam. Peak power is always fun to look at and with that we succeeded adding 57 hp peak-to-peak while still only spinning the engine to 6,200 rpm. What is also interesting is investigating the rest of the curve. As expected, at the lower engine speeds the bigger cam wasn't as powerful—losing as much as 16 lb-ft of torque at 3,800 rpm. In essence, the bigger cam moved the torque curve up in the rpm range. Looking at the band between 4,400 and 6,600, the bigger cam helped here too.

The smaller cam and head package produced peak torque at 4,200 rpm while the big cam version had to spin 1,000 rpm higher to 5,200 rpm to achieve peak torque. Yet the peak horsepower occurred roughly on both engines at the same rpm—6,100 to 6,200 rpm. This produced a much narrower overall power band (the rpm spread between peak torque and peak horsepower) on the big cam version. This is important to understand because while the big cam engine makes more power, you will want to make sure that the shift



5. Our biggest move was to go with the FAST multi-point EFI system that uses the RHS single-plane intake. This intake is unique in that it has bolt holes for both standard and Vortec-style heads. The manifold is available configured either for a carburetor or multi-point EFI. The throttle body flows 1,375 cfm.

6. This is the entire EZ-EFI 2.0 multi-point kit. The wiring harness can look intimidating, but all the connectors are clearly marked.



recovery point doesn't drop below peak torque or that will cost e.t. on the dragstrip. The main reason the powerband narrowed could be because the smaller heads were not able to supply sufficient airflow to achieve more power. Had we opted for a set of 210cc intake port heads, power would almost certainly improve, carrying peak power perhaps to 6,500 rpm. That might have pushed the power past the 500hp mark.

Our goal here was to produce more horsepower, but not sacrifice too much in terms of street manners. But let's be honest, this combination is pretty radical. Idle vacuum is a great indicator of how the engine's radical nature and at barely 9.5 inches of vacuum at 950 rpm idle, it's certainly on the lumpy side of street friendly. This is another point in EFI's favor since it can be more finely tuned compared to a carburetor at low vacuum settings, which allows it to run at slightly leaner air/fuel ratios at part throttle. This is in part due to multi-point's ability to deliver better air/fuel mixture distribution at part throttle compared to a carburetor. All these points will generate much better fuel mileage and throttle response compared to an 850- or 950-cfm carburetor.

Finally, this combination would be best served in a lighter weight street rod with a manual transmission and some gear to really take advantage of that powerband. But even in a heavy car with an automatic, its nasty idle bump will certainly make you a hero at the weekly Saturday morning doughnut rendezvous. There's nothing that sounds better than an engine with a little compression and a big cam.

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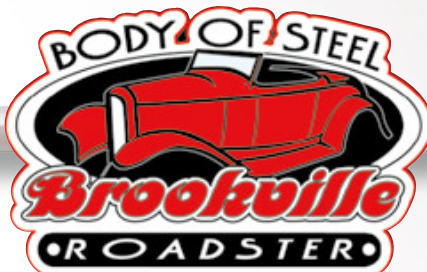
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7. We chose 36 lb/hr injectors that will deliver enough fuel to feed 550 hp at 45 psi of fuel pressure. Small injectors generally respond better at part throttle because they are easier to control under part-throttle but a larger injector offers room for additional power later on. For example, a set of 42 lb/hr injectors would push the normally aspirated fuel flow to nearly 650 hp.

8. Making all the connections isn't difficult. Each separate sensor connector is marked and if you work carefully it won't take long because each connector will only go to its intended sensor or position. The biggest hassle might be figuring out how to hide all this insulated spaghetti.



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9. The EZ-EFI color touch-screen controller reinforces the EZ part of the EFI for configuring the system. All you do is answer a few simple questions about displacement and fuel pressure and then choose the idle, cruise, and WOT air/fuel ratios, ignition timing values, and the engine will run just as instructed. Here, we're setting the air/fuel ratios.



10. Dyno day at Westech was uneventful since the engine fired up on the engine's second revolution and the first test cranked out over 480 hp!

CAM SPECS

Camshaft	Adv. Duration	Duration at 0.050	Valve Lift	Lobe Separation
XR-288HR-10				
Intake	288	236	0.520	110
Exhaust	294	242	0.540	
XR294HR-10				
Intake	294	242	0.540	110
Exhaust	300	248	0.562	

POWER CURVE

RPM	TQ1	HP1	TQ2	HP2	TQ+	HP+
3,200	353	215	365	222	+12	+7
3,400	376	243	372	241	-4	-2
3,600	397	272	385	264	-12	-8
3,800	412	298	396	287	-16	-11
4,000	421	320	410	312	-11	-8
4,200	424	339	420	336	-4	-3
4,400	421	353	425	356	+4	+3
4,600	418	366	430	377	+12	+11
4,800	413	378	435	398	+22	+20
5,000	408	388	438	417	+30	+29
5,200	404	400	440	436	+36	+36
5,400	401	412	440	452	+39	+40
5,600	395	421	437	466	+42	+45
5,800	388	428	432	477	+44	+49
6,000	377	431	419	487	+42	+56
6,200	364	430	413	488	+49	+58
6,400	---	---	399	486	---	---
6,600	---	---	385	483	---	---

11. This graph illustrates the classic big cam tradeoff. The shorter duration cam makes more torque below 4,000 rpm but then the longer duration cam asserts its tuning range adding nearly 60 hp at the peak.

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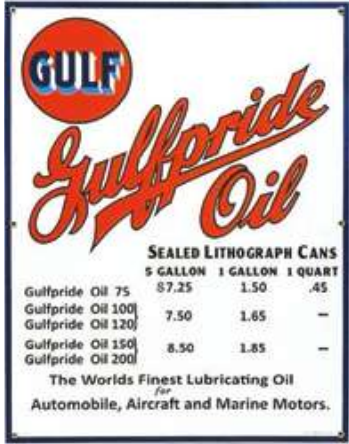
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DROP-TOP



GORGEOUS

feature

Robert Morgan's '41 Willys Convertible has it All

Robert “Bob” Morgan’s ‘41 Willys is a ground-up build—literally. The fiberglass body, complete with lift-off top, and the rolling chassis were built by Gene Horton of Impact Classic Reproduction (ICR) out of Illinois, while the build portion was handled by Chip and Joel Pendergraft of Chip’s Auto Restoration in Dayton, Oregon. The body originated from the original molds belonging to Dennis Taylor. Bob had a lifelong love of the Willys but he also liked the fresh air approach of an open car. So, the “Swoopster” (with its removable top and roll-up door glass) model open-air Willys is the answer to both of his hot rod questions: How to have a Willys and an open ride.

By **BRIAN BRENNAN** | Photography by **RANDY LORENTZEN**



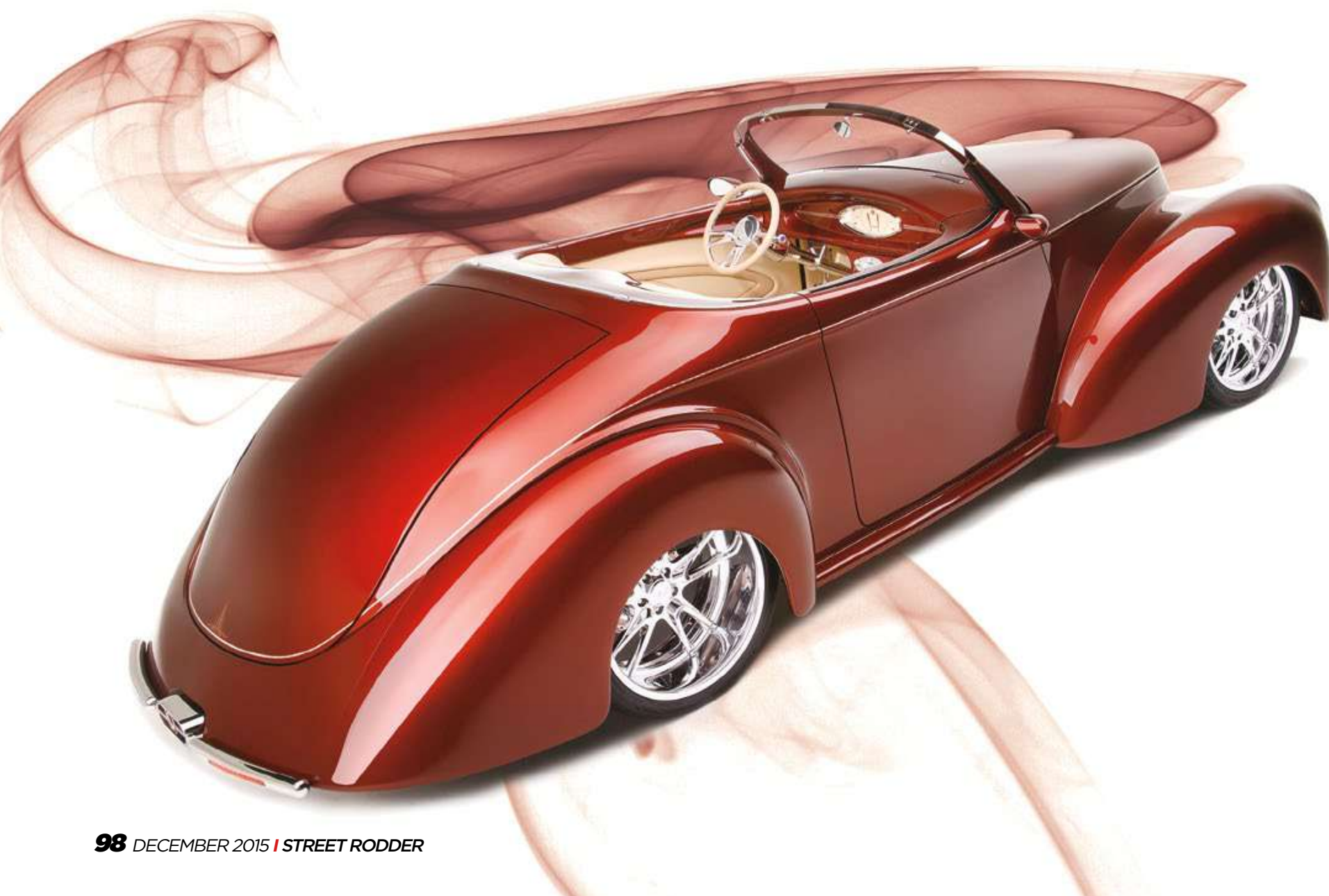
DROP-TOP GORGEOUS

Once delivered to the Pendergraft's Auto Restoration shop the build was on. The 2x4-inch rectangular tube frame wraps around a 102-inch wheelbase. To the rear of the custom chassis is a Ford 9-inch ring-and-pinion sporting 4.11 gears, limited-slip differential, and dropped into a custom housing with Strange axles, four-link, Panhard bar, RideTech airbag/shocks along with Wilwood calipers, 12-inch rotors, and an amazing amount of chrome to highlight the entire undercarriage.

In front the classic Mustang II IFS was put into place by ICR utilizing a Flaming River power rack-and-pinion along with a chromed Flaming River steering column; Wilwood dropped spindles, master cylinder, and calipers, and 12-inch rotors are employed along with RideTech air suspension; and, once again, plenty of chrome. Pressing

the brakes into service is an ICR pedal assembly. At the corners note the Billet Specialties Fury model wheels measuring 7x18 in front and 10x20 in back all wrapped in Hankook rubber with 215/45R18 and 275/35R20 supplying the grip.

A Willys wouldn't be a Willys without lots of power and especially of the blown variety. A Turn Key Powertrain supplied LS with a Magnuson supercharger, Hooker headers, MSD ignition, and Stainless Works mufflers are matched up to the 1-1/2-inch stainless steel exhaust tubing, which all help manage the potent V-8. The 575 hp and 550 lb-ft of torque provides plenty of forward motion for this Willys. Ushering the power rearward is a 4L60E with a 2,800-rpm stall speed converter, electric push-button shifter, and in between is a Drive Line Services driveshaft.



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DROP-TOP GORGEOUS

The fiberglass body by way of ICR is their Swoopster model that features the detachable roof and power door glass while Horton of ICR designed and hand cut the Willy's logo in the front grille. The headlights are '07 T-bird with Chips Auto Restoration (CAR) custom-made taillights. The bodywork was handled by Joel Pendergraft of CAR who also applied the PPG Root Beer Maroon paint, while Mitch Kim brushed on the striping.

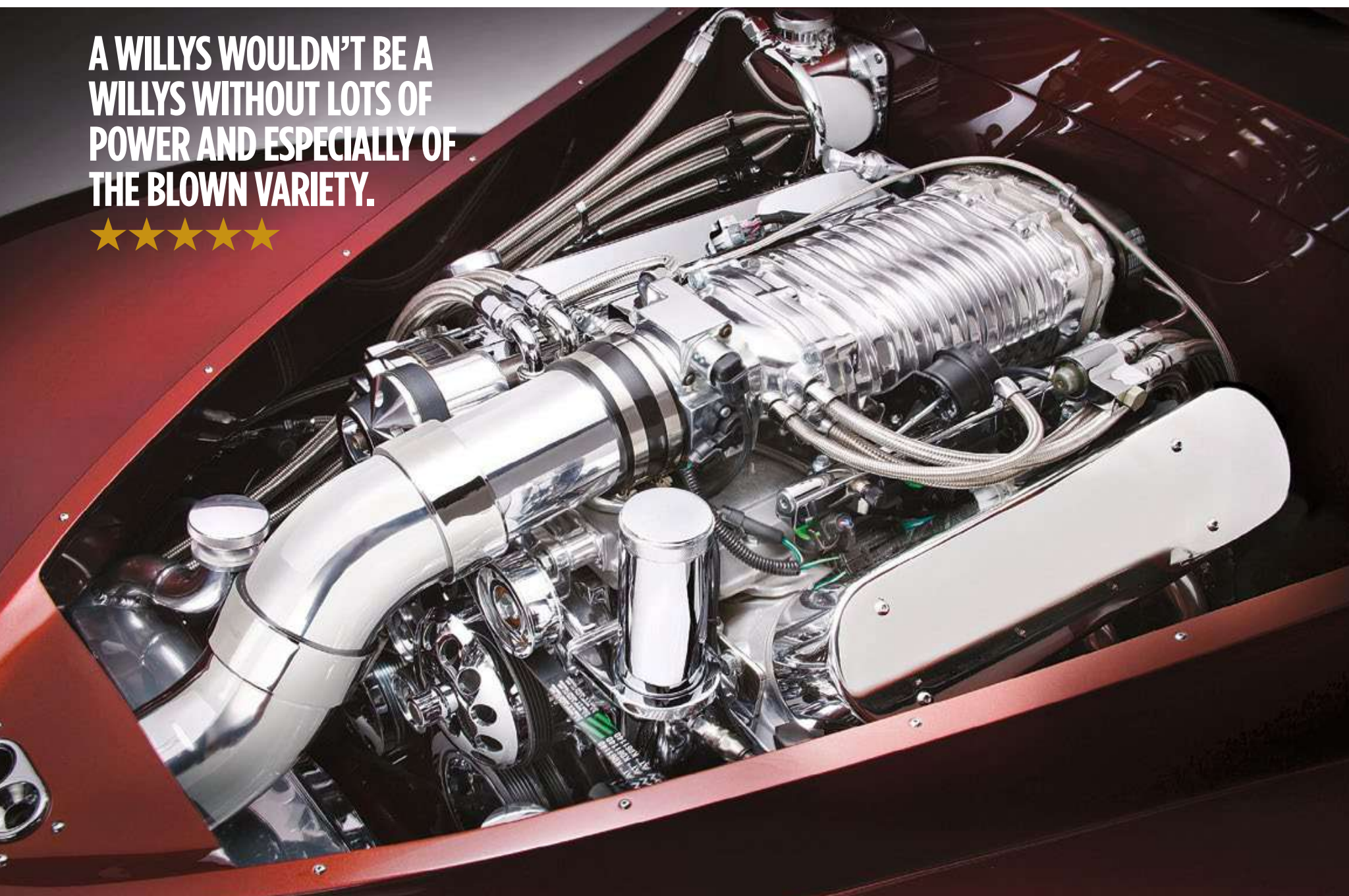
Inside the Willys the dash is outfitted with a '32 Ford-style insert with a full set of Classic Instruments custom gauges with the "W" logo centered between the tach and speedo. More interior goodies include the Pioneer stereo, Vintage Air A/C with panel with Clayton Machine Works vents, and a billet interior mirror. All the necessary wiring was

handled at CAR utilizing a Painless Performance Products wiring kit. We mentioned a Flaming River column earlier and it is topped off with a Billet Specialties leather-wrapped steering wheel. The custom bucket seats are stitched in Austrian leather by the hands of Jim Valenzuela of V34 Custom Interior in two-tone beige with a pair of seatbelts from Julian's Hot Rod Parts. The carpeting and door panels are more leather handiwork from Valenzuela while the center "waterfall" console was fabricated at ICR. The trunk is also fully detailed to match the interior.

If you like a wild-looking Willys then this Swoopster should fill the bill. Regardless a Willys should always have plenty of power and attitude and this one surely has that—drop-top and all. **SR**



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♦ The completed '55-'56 Ford chassis from Fatman Fabrications will soon be joined with Brent VanDervort's '56 Fairlane Victoria.

Rolling on a Repro Frame

The Fatman Fabrications '56 Ford Fairlane is on a Roll

By Gerry Burger | Photography by the Author

➤ **Building complete frames** for '50s cars is nothing new to the team at Fatman Fabrications, and while they build frames for many cars ranging from the '32 Ford and Tri-Five Chevy frames to things as obscure as a chassis for a Morris Minor, there has been one glaring omission from the lineup. Fatman has been building a frame for the '49-'51 shoebox Ford for years and all this begs the question, why not a '55-'56 fullsize Ford chassis?

Well, it was just a matter of finding the time to produce the new chassis and we are pleased to announce that time is now and Brent VanDervort has just rolled production chassis number one under his very own 1956 Ford. While there is no denying the popularity and good looks of the Tri-Five Chevrolet, many people, this writer included, think the '55-'56 Ford is a better looking car and this new complete chassis will be a big help to hot rodders building these popular cars.

We have already introduced this new chassis detailing how VanDervort goes about prototyping a new chassis, along with the actual fabrication and components used. Like most Fatman frames this one rolls on fully independent front suspension that will employ Wilwood disc brakes and a power rack-and-pinion steering for a completely modern suspension system. Out back a new 9-inch rear from John's Industries will spin the rear wheels while RideTech coilover shocks are found on all four corners.

When it comes time to power a '56 Ford it seems only right to select a modern motor with direct roots to Dearborn. In this case VanDervort opted for a 4.6L Ford motor coupled to a 4W70R automatic overdrive transmission. This will provide the perfect power for this mild custom cruiser.

With the new chassis complete it was time to remove the old body and test-fit it to the frame. Remember, this is chassis number one, actually a prototype, so some aspects of the production chassis may vary just a bit—after spending a couple hours under the '56 wrestling with no less than 20 body mount bolts. Judging by the bracing in the outer floor

of the '56 Ford, the number of body bolts and the almost complete lack of chassis crossmembers Ford must have designed the floor of the car as a structural member of the chassis. Fast forward 60 years and we're thinking it would be better to have a chassis filled with real crossmembers rather than rely on vintage floorpans for strength. Team Fatman agrees with that thought and has constructed a chassis that is extremely strong and rigid.

Before removing the '56 Fairlane Victoria body from the chassis a temporary inner structure was welded to ensure the hardtop-style body would not flex and twist when it was removed. With the inner structure complete and all the body bolts removed it was time to lift the body off the original frame. Now at home this would entail enlisting every hot rod buddy you know to lift the body up, but at Fatman's a lifting strap and fork truck made short work of the job. The body was actually lifted by the aforementioned inner structure and brought over to the automotive lift where it was positioned and raised in the air.

With the body in position the same fork truck brought the new Fatman Fabrications '56 Ford chassis into the

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installation shop and it was promptly rolled under the car and placed on six jackstands. Then the body was slowly lowered in place.

Remember we are still working on a prototype project here, so as it came down everyone was carefully watching for any contact with the frame. The first thing to touch was the top side of the driveshaft loop. A small notch was cut in the floor to permit the loop to protrude inside the car. As it turns out the driveshaft loop protrudes through the floor under the rear seat. A simple hump in the floor will be fabricated and the stock rear seat goes back in place without modifications.

As the body came down lower the upper shock mounts contacted the forward corners of the trunk floor. Once again a notch was made with a cut-off wheel and then the body came to rest on the chassis. A check of all those body mounts showed that the front mounts needed to move rearward about 3/8-inch, beyond that every mount lined up perfectly, a real testament to VanDervort's skills on locating mounting points while prototyping a frame.

By the time the body was on the frame we took a quick lunch break and returned to place the motor and transmission in the new frame. Once again we would be checking for an interference with the floor or the firewall as the 4.6L Ford motor may be small in cubic inches (281 ci), it is not small in external dimensions. Once again the planning and design of the chassis was spot-on and with very minor adjustments to the frame adapters the 4.6L Ford motor slipped right onto the motor mounts and the 4W70R tranny bolted up the rear crossmember.

We were amazed at the complete lack of drama in placing a 60-year-old body on a new chassis for the first time. There were virtually no problems and the few minor adjustments made in this prototyping process are now part of the all-new '55-'56 Ford chassis from Fatman Fabrications, and Ford lovers, if you are wondering, yes, Fatman also produces a complete chassis for the very popular '55-'56 Ford Thunderbird, but we digress.

Take a look at the photos and we think you'll agree, swapping that old chassis for a new Fatman unit is one giant step forward when it comes to building the popular mid-'50s Fords.





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2. Prior to lifting the body off the frame a box tubing inner structure was welded in place from the door openings to ensure the body would not flex. Then a lift strap and a fork truck did the heavy lifting.



4. The new Fatman Fabrications frame incorporates of box-tubing crossmembers. This frame is superior



body mount bolts and things like brake lines, is ready for removal.



3. The original frame is in good condition for a 59-year-old piece, but note the almost complete lack of crossmembers from the center of the frame rearward.



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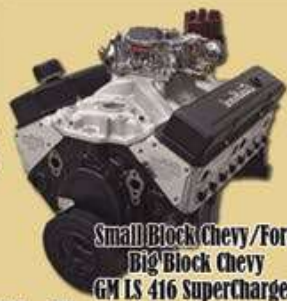
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5. The old Y-block served VanDervort well, but along with a new frame will be a new power source in the form of a 4.6L Ford engine. That Y-block leaked enough oil to keep the front portion of the frame rust free.



6. The Fatman frame is designed to accept a multitude accommodate the most popular engines. Once again,



7. The forklift transported the '56 Ford body to the nearby lift in the Fatman Fabrications installation shop. This makes body swapping a breeze.



9. With the new chassis situated under the body it was time to lift the chassis up so it rests on six jackstands. Then Pete D'Orta will lower the body down until the old body meets the new frame.



10. The body slipped down over the frame perfectly, but there was some contact between the driveshaft loop and the rear floor area. The front fit up perfectly.



of engines and they have mounts to note the crossmember design in the frame.



8. Next the chassis was brought over to slide under the body; once again the fork truck makes this easy.



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11. The main point of contact was the driveshaft loop. A cut-off wheel made a quick slot, which will permit the body to come down. This loop is directly under the rear seat so a simple cover will be welded to the floor.



12. While cutting the driveshaft loop allowed the body to come down it didn't quite rest on the top of the framerrails, as seen in this photo.



13. This time the culprit was the upper coilover shock mounts, they contacted the floor in the front corner of the trunk. The cut-off wheel provides clearances and a simple box will be welded to cover the opening.



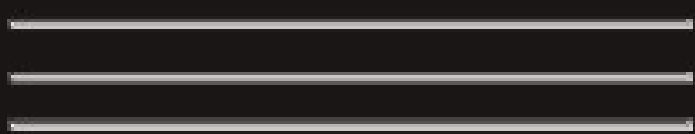
14. With those three clearance cuts the frame is now resting on the chassis and all body bolts are in place. The John's Industries 9-inch rearend clears the trunk floor nicely, and note the ample room for exhaust in the crossmembers.



15. The body mounts all align perfectly, and there are at least 20 bolts holding the '56 Ford body in place.



16. Next up was installing the 4.6L Ford motor. During construction of the frame they measured the front and rear crankshaft center heights to determine where the new drivetrain should fit.



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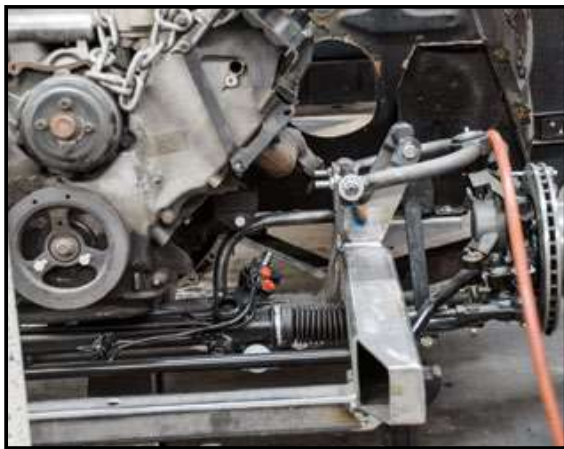
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17. The Fatman Fabrications signature motor mounting system consists of a tube that connects from the framersails to the front crossmember. Here the 4.6L Ford motor is bolted to the motor mounts.



18. Meanwhile Mike "Bubba" Craig is underneath dealing with the transmission mount.



19. Here's the engine and transmission in place. Everything fit fine with just a minor reshaping of the transmission tunnel where it meets the toeboard. This is due the large bellhousing of the overdrive automatic transmission.

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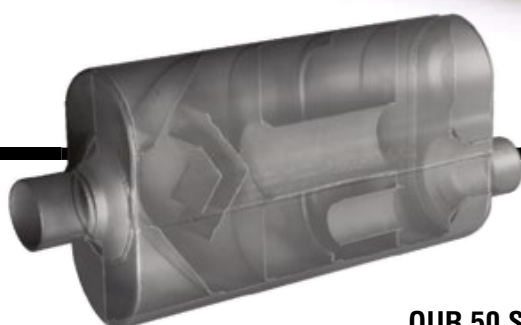
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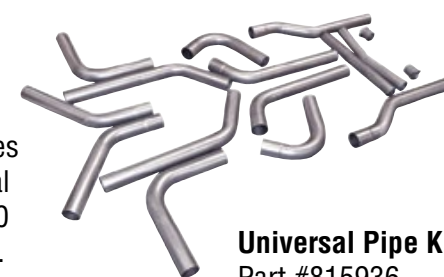


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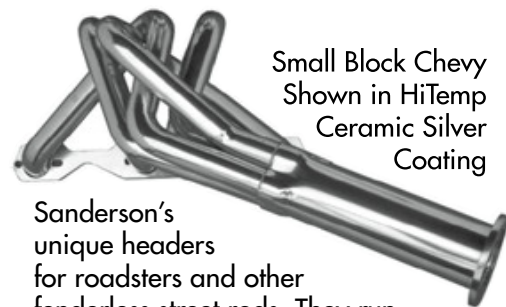
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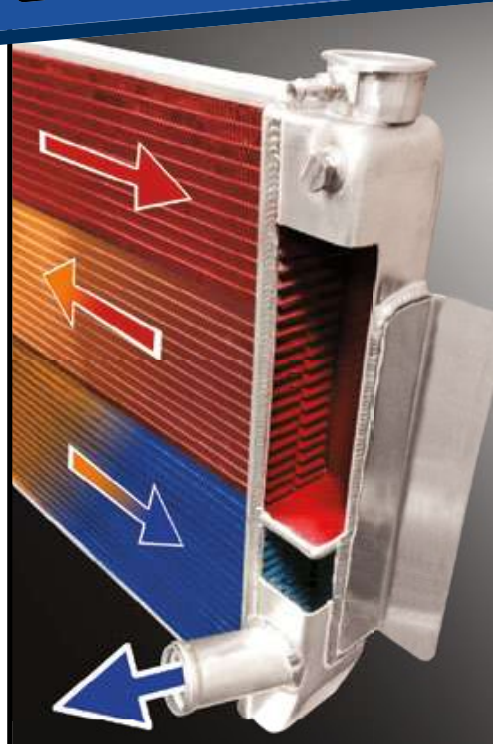
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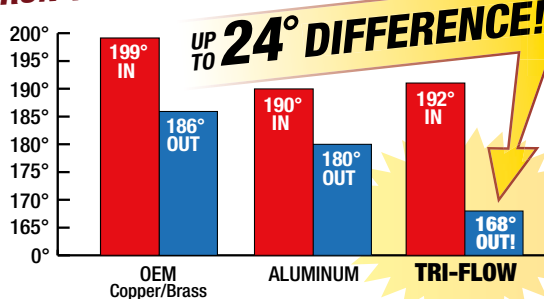


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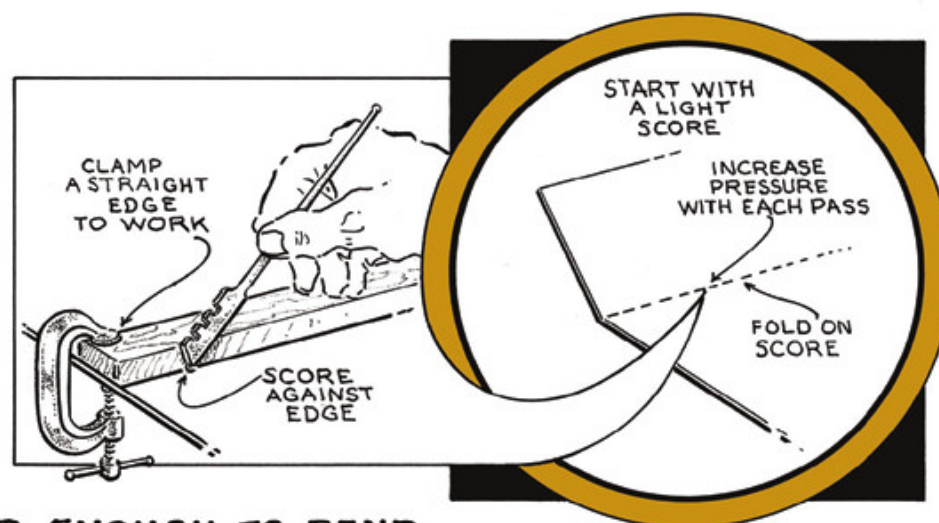
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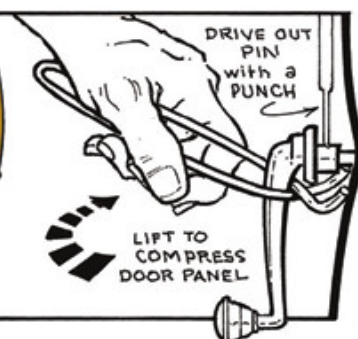
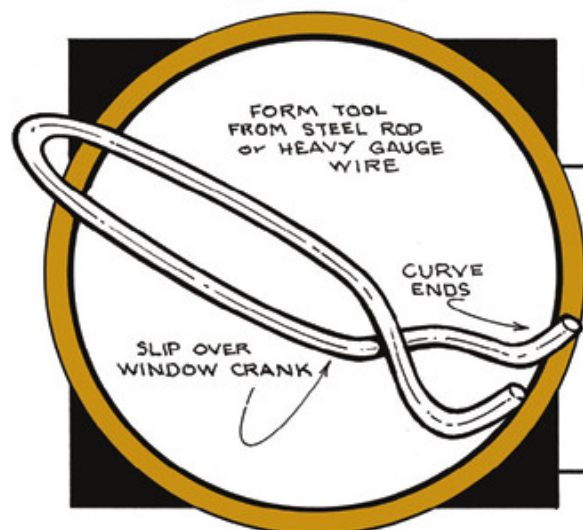


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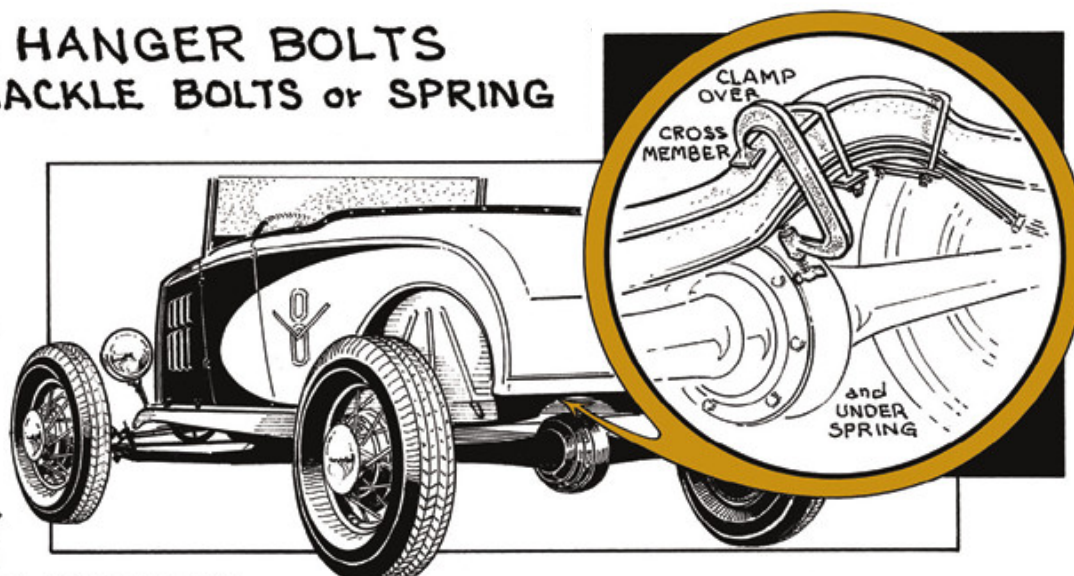
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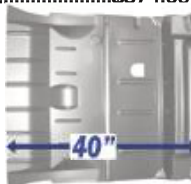
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BY CHUCK VRANAS



Larry Gaffigan's '65 Comet Cyclone

◆**Ever since the dawn** of hot rodding, car builders have been shoehorning the largest mills possible into the smallest cars, hoping to beat their competition. It's a formula that has always worked, especially when looking back to when early soup-jobs were stripped down and filled with big cubic-inch V-8s, making them the terror of any cruise or grudge night at the local dragstrip. The concept didn't stop there as Detroit was busy in the early '60s producing plenty of economy-based cars. It was these small lightweights that many racers focused on as they were inexpensive to buy from their local dealerships, making them prime candidates for engine transplants.

For Larry Gaffigan of Silver Springs, Maryland, growing up as a teen in the '60s definitely had its perks. He was able to follow his passion for hopped-up cars starting at age 17 when he purchased his first muscle car, a '65 Pontiac GTO. Having grown up like many others at that time he was

consumed by an endless stream of high-performance cars roaring through the neighborhoods of his town. It wasn't long before he was a regular cruiser hanging out at the Mighty Mo in Queenstown, which was well known back in the day for having some of the hottest street cars in their lot as they waited for late-night runs on the street. Larry was always fascinated with big performance in small packages and the work that it took to get the combination just right.

As the years passed he owned

a number of fast cars, including one particular '68 Camaro able to run 8-second quarter-miles at the dragstrip. Somehow he never forgot the exhilaration of the sounds of a big-block V-8 rumbling from under the hood of a Mercury Comet from back in the day. He decided it was time to start a search and began canvassing the Internet in search of one. What he came across however was a hop-up ready for action, being offered for sale from a private collection. Originally designed and commissioned by Gorge Boskovich II, this particular '65 Comet Cyclone was not for the faint at heart. Immaculate from every corner the car left Larry breathless with the crown jewel lurking under the hood, a fully built 456ci Ford SOHC V-8. Not wanting to waste any time a deal was made and the car was shipped back to Larry's shop.

Let's take a look at just what it took to bring the car to life. Boskovich being a hard-core horsepower enthusiast had always wanted a fast



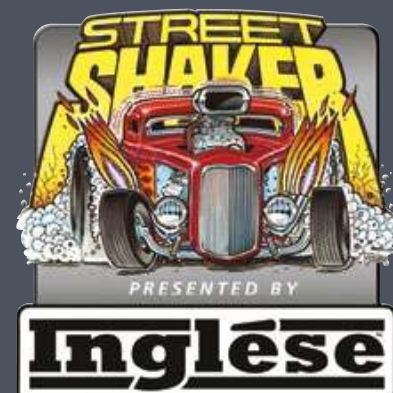


Comet back in the day but never caught the right one. A search led him to a rust-free 289ci-powered '65 model that was perfect to bring his vision to life. He immediately brought the car to Butch Engelbrecht of BE Motorsports in San Diego, California, to work his well-known magic on it. To prepare the car for the massive engine swap he worked with Hart Hot Rods of Ventura to first address the suspension. Out back a Ford 9-inch rear filled with 4:11 gears and Strange Engineering 31-spline axles mounts to a custom four-link and Aldan American coilover shocks. To shoehorn the engine in place required the removal of the shock towers and to reconfigure the front suspension. A Heidts IFS adds plenty of great handling, especially when combined with Aldan American coilover shocks and rack-and-pinion steering. To slow the beast a set of Wilwood 11-inch vented rotors and polished four-piston calipers do the deed at each corner when called into service from a matching power master. Finally 16-inch rollers from E-T are shod with BFGoodrich rubber to transfer the power to the ground.

For the ultimate Street Shaker, Boskovich brought an original '66 Ford 427ci SOHC V-8 to Crescenta Valley Ford Specialists in La Crescenta, California, to commence the build. The talented team upped the ante, raising the cubic inches to 456 and filled the block with go-fast goods, including a steel crank linked to Crower rods wearing Venolia 10.75:1 pistons. An Isky stick sets the beat while a set of heavily massaged Ford SOHC heads breathe deep through a Ford dual-quad intake

wearing a pair of Holley 760-cfm carbs while the completed engine dyno'd at 657 hp. The installation is flawless and looks like it could have been a factory option. A custom 3-inch stainless exhaust moves the gases through Flowmaster mufflers while shifts move through a warmed over Ford C6.

Since the body of the car was virtually rust free, Engelbrecht stripped it down and metal finished it to perfection while also setting all the gaps. The only body update was to incorporate a fiberglass teardrop scoop to the factory Cyclone hood. With everything ready the body was prepped by Jeff Hixton Auto & Body Repair in Ventura who then laid down a lustrous coating of PPG dark sapphire blue metallic bringing the project to life. Inside the business office the stock dash and Rally Pac are in place with a Billet Specialties steering wheel carving the course. A set of '90s-era Thunderbird seats were reworked and covered in soft Mercedes gray leather with matching door and kick panels offset by a



COMP Performance Group **Tech Tips**

COMP CAMS

CHECK THE SHORT PUMP

When using a short water pump on a Chevy small-block make sure there is enough clearance between it and the timing cover. If they are snugged against the cover they can push the cam back and destroy the block.

FAST

TANK TALK

An in-tank fuel pump is preferred for EFI because they stay primed, run quieter, and stay cooler, which also means longer pump life. If an inline pump is chosen, it needs to be mounted no more than 10 inches from the tank, and in a position to be gravity fed. They are great pushers, but terrible pullers.

INGLESE

INSTALLING AN EFI SYSTEM

When installing an Inglese EFI system, don't tune it at idle. The system will need the loads of driving to properly program itself to your vehicle's needs. If it's installed and tuned while the car is stationary it will only learn programs for idling and throttle revs without a load and will not run right.

custom console, Ford shifter, and Mercedes square-weave carpet all by Dan Miller Custom Upholstery of Westlake Village. The completed car leaves you awestruck at the combination of power and style infused into its small shape.





BY TIM BERNSAU



Mike Spanovich | 1963 Ford Galaxie | Monongahela, Pennsylvania

◆ **When Mike Spanovich** was a kid in the '70s, his dad, Rich, drove a '63 Ford Galaxie mild custom. He drove it to work, on family vacations, trips to Grandma's house, bringing home the Christmas tree, and to take Mike and his siblings to school. "We would sit on the front seat with our legs outstretched, while he wiped the bottoms of our shoes. Only then were we able to enter the car," Mike remembers.

The Galaxie was sold in 1978, but not before Rich had removed the '59 Chrysler Imperial grille and reinstalled the stock piece. Three decades later, Mike's brother, Rick, spotted a '63 Galaxie two-door box-top at a car show. Mike agreed to buy it and he, Rick, and their dad rebuilt it as a tribute to the old family car. The first thing they did was retrieve the Imperial grille from the garage rafters. The front fenders were extended and the valance panel was modified for the Imperial grille and headlights.

The body was nosed, decked, and shaved. Spotlights skirts were added, along with new glass. The four-way flasher unit—just like the one Rich installed on his Galaxie in the old days—was a surprise gift from Rick.

The stock suspension was lowered with de-arched springs and lowering blocks in the rear and cut front coils. American Classics whitewalls were mounted on 14-inch Astro Supremes. Mike's friend Paul Sheppick rebuilt the 289 engine.



The paint is '66 Cadillac Antique Gold Iridescent, chosen based on memory and old photos of Rich's car, and sprayed by Rick. Mike and Rick found the '62 side trim at the Hershey swap meet and cut it to fit the '63.

New black Naugahyde upholstery was stitched with rolls 'n' pleats. The first Galaxie didn't have a CD player, so Mike hid his in the glovebox. The stock steering wheel is finished in heavy metalflake.

If you see Mike's tribute Galaxie at a show, it's likely that it will be parked next to his dad's '51 Merc custom (owned since 1973). Obviously, family customs are important in the Spanovich family.

➔ WANT TO SEE YOUR VEHICLE IN EARLY IRON?

Email a good photo (at least 1 MB in size) and a paragraph telling us about you and the car to: tbernau@enthusiastnetwork.com. We'll consider all entries.



CLASSIC INSTRUMENTS TECH TIP

Classic Instrument's gauge clusters with ZST technology have programmable speedometers and tachometers. These gauge clusters differ from your car stereo in that, once calibrated, the gauge cluster does not need to have constant power in order to "remember" the calibration. Removing power to the gauge cluster (including the use of a battery disconnect switch) will not cause the gauge to lose its calibration.

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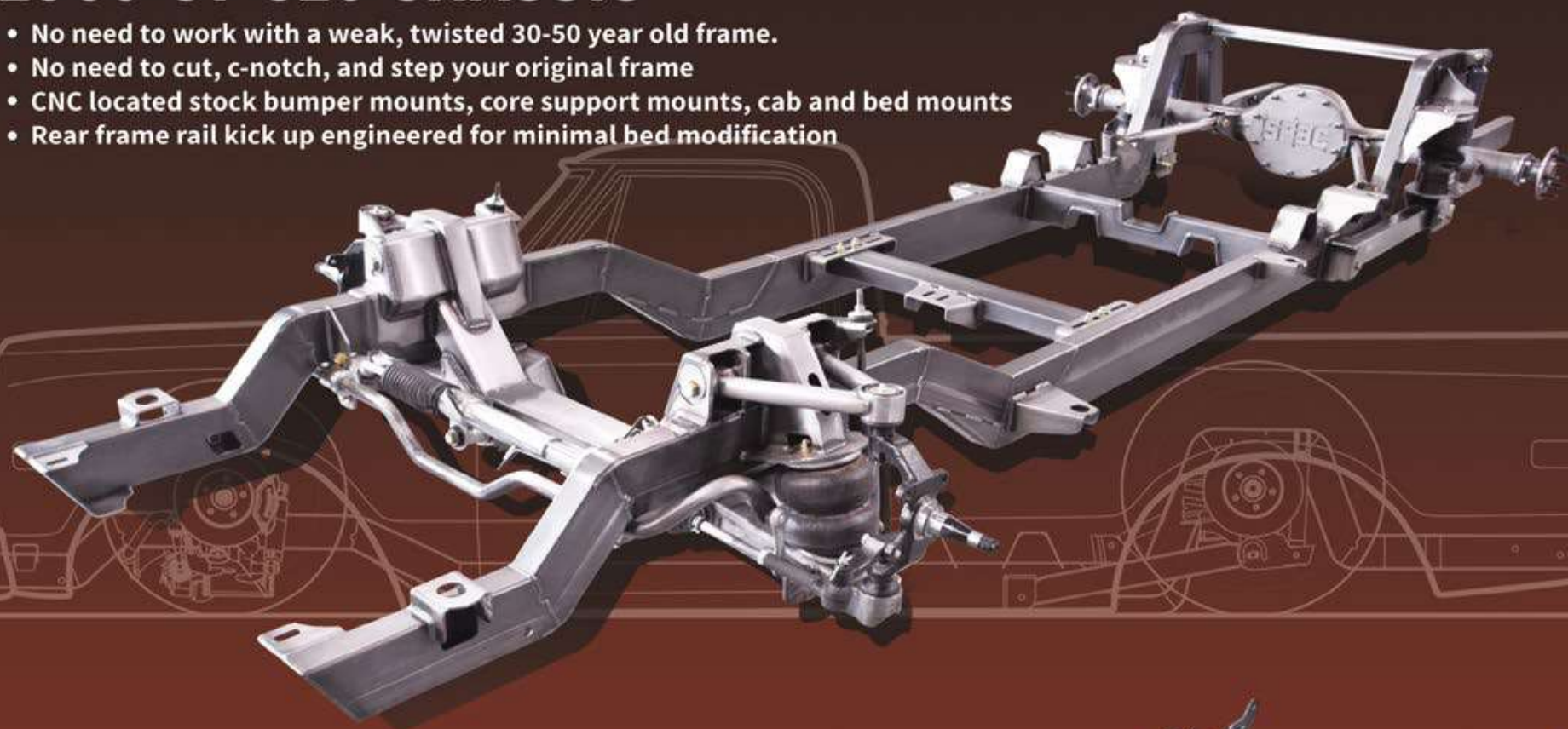
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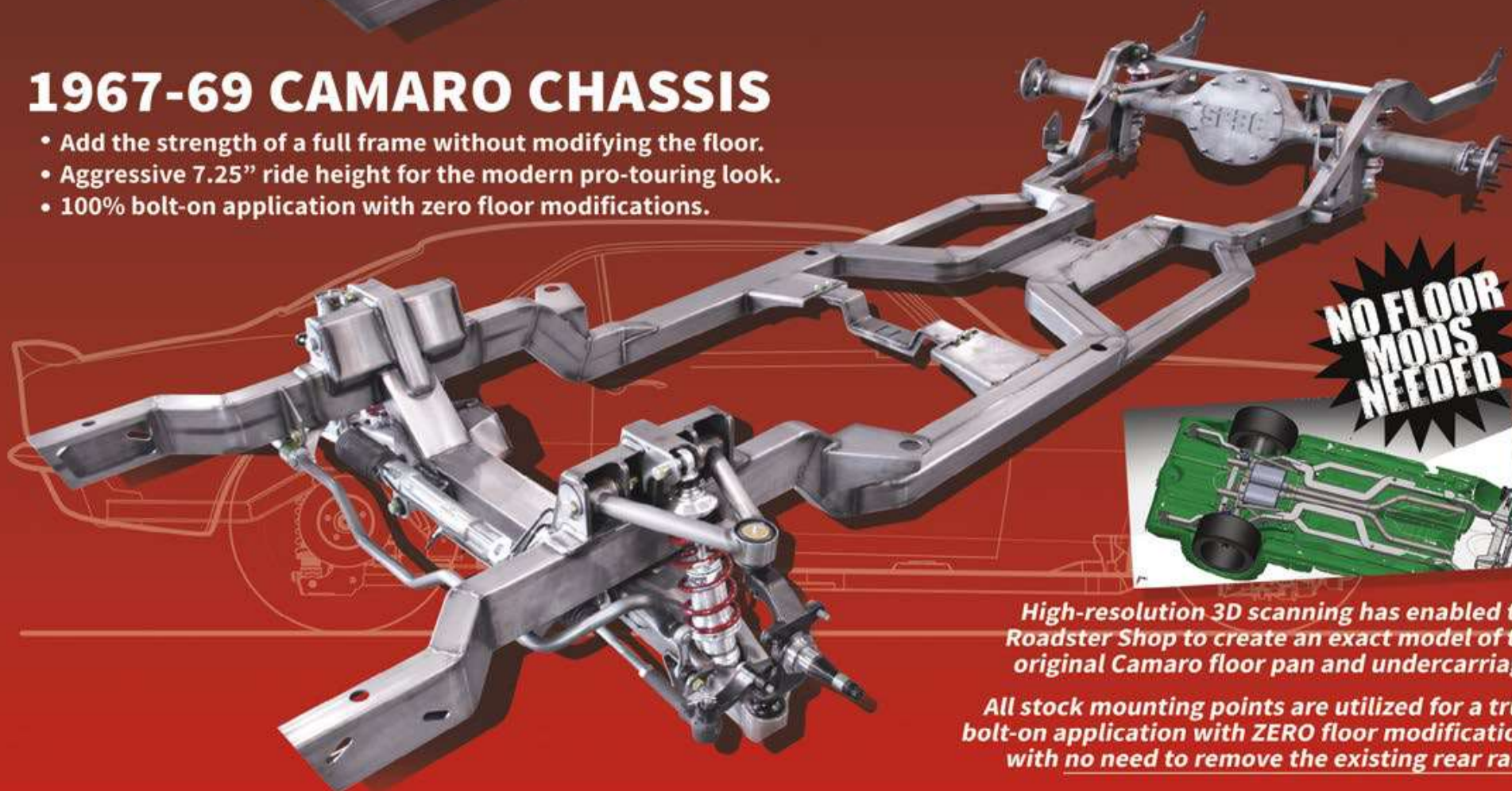
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BY RON CERIDONO

A Floor Fit for a Garagemahal

♦ **One of the** most confusing decisions when building or refurbishing the garage of your dreams is what to do with the floor. Over the years we've seen them tiled, bricked, and even carpeted. We've seen stunning examples of wood floors, one was covered with planks from an old bowling alley, another the recycled floor from a high school gym that was torn down. But while many of the garage floors we've seen were impressive many of them lacked practicality.



♦ Although we still have to insulate and finish the interior walls, the floor of our garage has a unique and durable finish.



♦ The secret to applying any finish to a concrete garage floor is getting it clean. We used Oil Eater cleaner-degreaser from Eastwood.



♦ To apply the various cleaning solutions we used a stainless steel sprayer. It also comes in handy to spray Oil Eater on parts to be cleaned.



♦ After hosing out the shop we applied the Oil Eater to small sections of the floor with the sprayer then scrubbed them with a stiff broom.



♦ The floor was rinsed, squeegeed, and then left to dry for several days.



♦ We decided to stain our concrete floor, which meant it had to be cleaned once more with a product called CHO that opens the pores of the concrete.

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♦To add color to our floor we used transparent concrete stain.



♦Stain can be applied by a number of methods; with a large area an airless sprayer works best.



Once the stain dried, the floor was sealed to protect it from liquid spills and abrasion.



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We certainly wanted our concrete garage floor to look good, but our tendency to spill various fluids and the abuse suffered from rolling engine stands and floor jacks around, not to mention dragging heavy items from one place to another, requires a durable finish—and to fit in our budget it has to be affordable.

Regardless of what material you choose before it is applied the first and most important step is cleaning and prepping the surface. Old concrete floors will no doubt have an accumulation of grease and oil stains, but even new floors will be contaminated to some degree. To clean our floor we used Oil Eater cleaner and degreaser from Eastwood. Much safer than old-style petroleum-based solvent cleaners its chemistry allows it to lower the surface tension of water for better cleaning, while its non-petroleum solvents dissolve oil-based dirt and grime. According to the manufacturers, "The unique properties of Oil Eater keep the dirt and oil in suspension so they get rinsed away, instead of just being pushed to a different spot on the surface." Oil Eater can also be used for engine and chassis cleaning as well as parts cleaners and pressure washers.

While paint is a popular option for garage floors, we decided to do something different and use stain, which meant there was one more process necessary to prepare the concrete. To accept the stain it's necessary to etch the surface, for that we used a product called CHO from Butterfield Color. Available



◆After the sealer dried, this is what our floor looked like, the mottled color is a result of the variations in the way stain penetrates concrete. It looks cool and is easy to clean.

from most masonry supply stores, this citric acid-based product opens the pores of the concrete to ensure the stain penetrates.

With the floor cleaned, prepped, and dry we applied Elements Transparent Concrete Stain. It should be pointed out that due to the variations in the way transparent stain penetrates concrete the color will not be solid or uniform like paint.

The last steps in finishing the floor were the application of a sealer to repel fluids and resist abrasion and two coats of liquid wax to maintain the sheen and supply an anti-slip surface when the floor is wet. Both are applied with a mop and two thin coats of each are required.

Although transparent stain looks cool and is durable, the process is time-consuming due to the prolonged drying times between cleaning and the number of steps in application and sealing. Another consideration is the final appearance—it isn't for everyone. There is an uneven, mottled look particularly on old floors that may have stains that are impossible to remove completely. For those who prefer a solid, even color, consider the paints available from Eastwood. Either way, paint it or stain it and you'll have a floor fit for a garagemahal.

★ EASTWOOD TECH TIP ★

If your air compressor can't handle a pneumatic DA sander, get a 5-inch electric orbital sander—works just as good and the paper is cheap.

◆Available from Eastwood, Drylok E1 is a one-part epoxy floor paint that is resistant to hot tire mark, chemicals, oil, grease, and gasoline stains. Applies easily to new and

aged concrete, cleans up with water, and is storable. E1 is a semigloss coating, available in four colors: slate gray, light platinum, natural sand, and arctic white. One gallon covers 300 to 400 square feet.



◆Also from Eastwood is this POR-15 Floor Armor floor painting kit. Floor Armor is able to withstand abuse from forklifts, floor jacks, and constant heavy traffic; oil and grease stains wipe up easily with a rag. Application does not require acids or flooding the floor with water.

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When Bad Things Happen To Good Radiators

Q. I've been reading your columns for years, in fact it's the first thing I turn to when my new *STREET RODDER* shows up in my mailbox. I've followed the advice in your column and lots of tech stories, but I have to admit I listened to someone who disagreed with something you wrote and I found out the hard way you were right.

After years of scrimping and saving I finally got my '57 Chevy running. I needed a fan so I picked up a stainless flex fan at a swap meet. The first lesson I learned, if something is really cheap it's probably worth just what you paid for it. After I installed the fan on the small-block in my Chevy I noticed the blades extended past the bottom of the core quite a bit. I remembered reading something you wrote about that not being right, but couldn't remember why. I wanted the biggest fan that would fit so I decided to use it; mistake number two. I asked

some my friends what they thought about the fan and several said not to use it because it looked cheap, one was sure it shouldn't extend past the core, but one friend was sure it would be OK because he had done it before without a problem. Lesson number three, don't keep asking the same question until you get the answer you want when deep down you know it's wrong.

The first time I took my girlfriend for a ride I was going to impress her and run the Chevy through the gears but I was still in First when we heard a terrible noise that turned out to be the fan eating the radiator. Looks like you were right, but I have to confess I'm still can't remember why.

Chris King

Via the Internet

A. The reason the fan ate the radiator was the difference in static pressure behind the radiator core and the tank. Static pressure is

basically the amount of restriction in front of and behind the fan.

When the fan blades were moving behind the core they were pulling air through the radiator with a certain amount of restriction. But when the fan blades went behind the solid tank the restriction increased—the blades were trying to pull air but flexed forward instead and you know what happened after that. The change in static pressure was the main culprit and while you would have had problems, eventually even with a good one, the cheap fan probably sped up the inevitable.

In your case the fan must have been very close to the radiator. However, even when a flex fan is further away there are problems with the fan blades that extend past the core. Any flexing of the fan blades in an unintended direction often leads to cracks, which can cause the blades to break off with potentially lethal results.

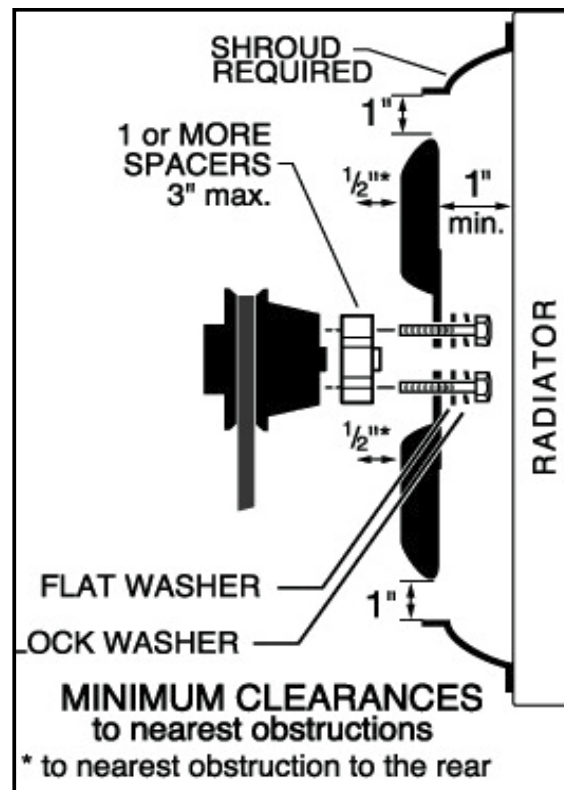


♦ This happened to a colleague's car a while back, same situation as yours with the same results. The flex fan was too close to the radiator and the blades extended beyond the core and passed behind the bottom tank.



♦ As soon as the engine ran faster than idle the fan blades flexed forward and several caught the lip where the bottom tank attached to the core.

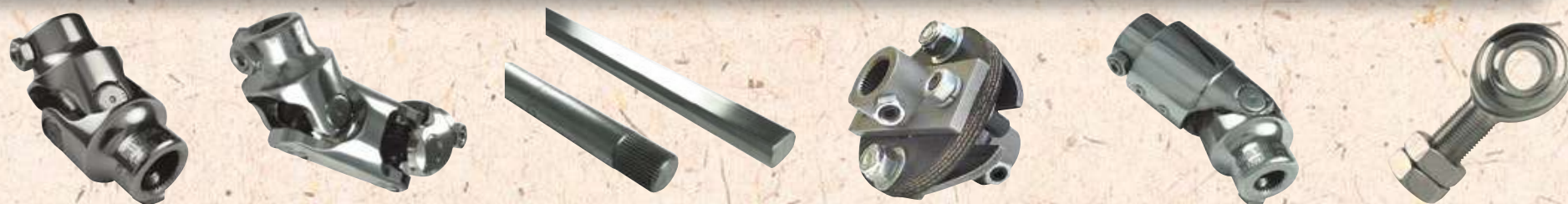
♦ Needless to say the bent blades ripped up the core of a brand-new radiator. Imagine what could happen if a damaged fan threw off a blade at high rpm. That's a great argument for using a shroud.



♦ Flex-a-lite has been making flex fans for decades. This chart shows the fan mounting specifications they recommend—they also strongly suggest a shroud is installed to help cooling and as a safety device.

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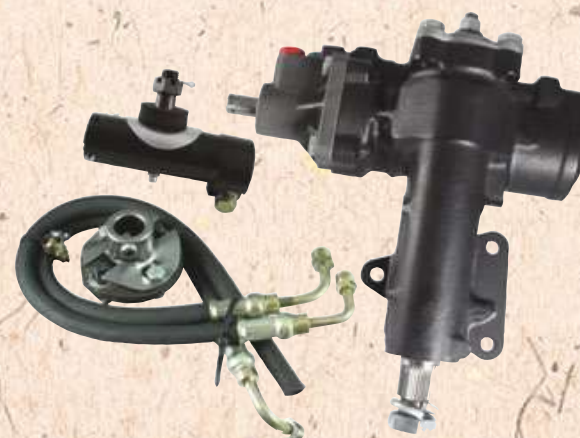


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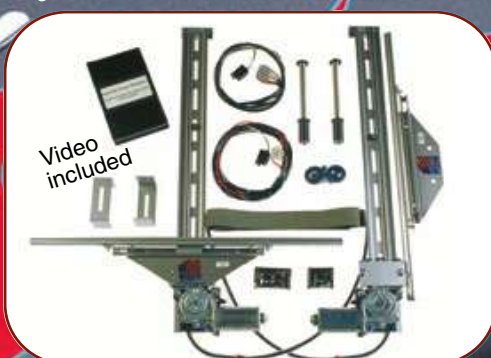
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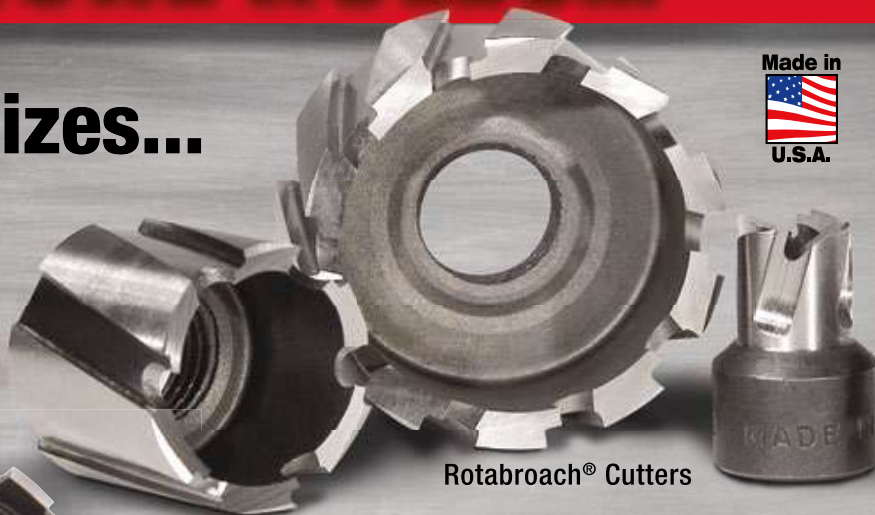
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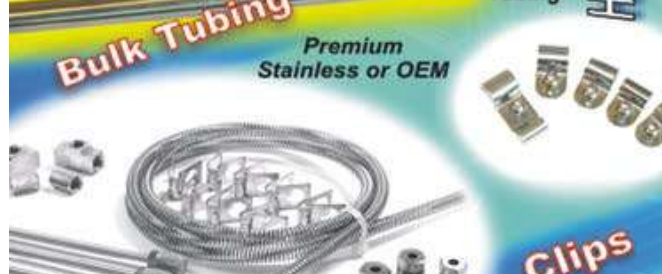
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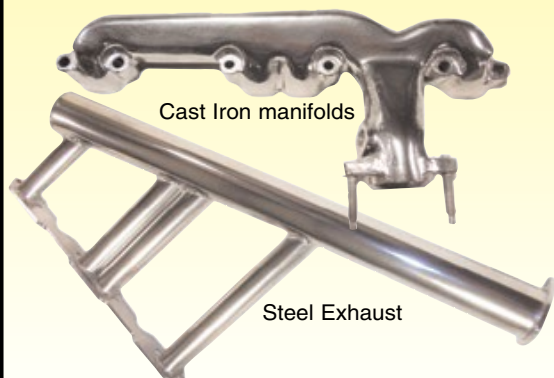
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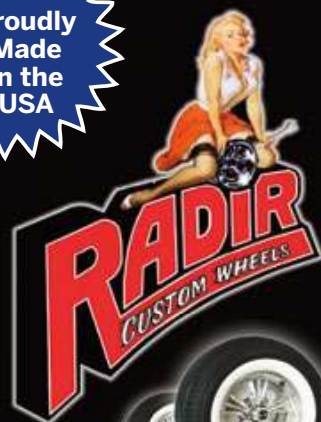
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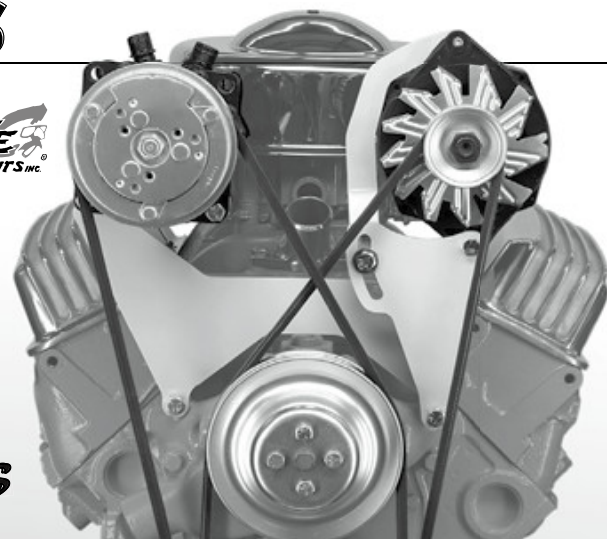
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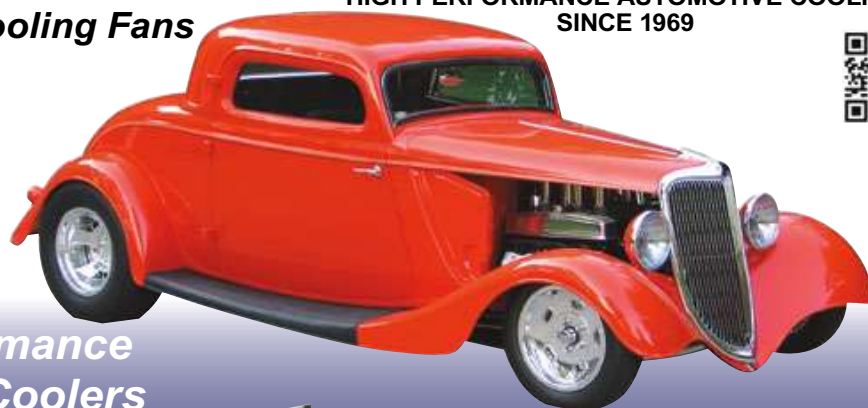
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BY RON COVELL

Q. I've had a '68 Charger since 1984, and I'd like to reproduce most of the exterior sheetmetal in aluminum, including the bumpers.

My plan is to cut aluminum panels to size, hold them to the centerline of the original panel with Clecos, and form the aluminum against the steel backing with a handheld pneumatic planishing hammer. After forming the individual panels this way, they would be welded together and the joints smoothed.

Does this sound like a good plan, and if so which of your DVDs would give me the information I need to do this? I want a really superior part when I'm done.

John
Via the Internet

A. You can do a lot of forming with a handheld planishing hammer. When working over a rigid form, this technique is called "flow forming." The technique works very well for panels that are flat in the middle, where all of the "action" is at the edges, like the photo. The flat part must be held with a clamping block, and when constrained in this way, you can form a flanged or radiused edge on the panel a few inches wide.

This technique may work very well for the bumpers of your car, although I think it may be impractical to make them from one piece of metal. A reasonable approach might be making them from two pieces, with a joint at the peak in the center of the bumper.

Another variation of the hammerforming process is working into a female form. This requires constraining the edges of the metal being shaped, and forming the metal down into a cavity. You can do larger panels this way, since each impact causes the metal to stretch; and it can stretch, without forming folds or wrinkles, as long as the edges are firmly constrained.



♦ Forming sheetmetal against a sturdy backing with a handheld planishing hammer is sometimes called "flow forming."

There are several challenges to forming full-sized automotive panels this way. Let's consider the front fender of your car. If you simply Cleco a flat panel to the centerline of the panel, and start working it with a handheld planishing hammer, once you hammer just a couple of inches away from the Clecos, you'll find that the metal on the opposite side will lift up, hampering your ability to hammer the metal down very far. Even if you constrain the metal opposite where you are hammering (with deep-throat clamps, for example) you will soon reach a point where the metal will be pushed down with the hammer, but will bounce back, since you are trying to shrink the metal with each hammer blow, and you just can't force metal

to shrink by hammering unless it is very tightly constrained. Another problem is the strong likelihood of deforming the steel fender when you start hammering the aluminum against it.

In theory, you could work against the inside of the fender, so it would act as a female hammerform, and you could reinforce the outside of the fender by casting a dense material against it (concrete would be one possibility here), so the hammering wouldn't deform the fender. Unfortunately, there are several complications that make this approach unfeasible. Most fenders have flanges and reinforcements, so your blank of metal has to be cut down to fit inside all these obstacles. Then you'd have to develop a way to clamp the edges solidly against the inside of the reinforced fender. Even if you got this far, and successfully formed the panel, you'd have to add on more metal to create the flanged edges, which may be more problematic than making the panel with more traditional techniques.

If I were to tackle this project, I would use an English wheel to develop the all-over contours of the panels, and a beading machine (or specially built hammerforms) to create the edging. Two DVDs that show these processes in detail are *Scratch-Building a Fender* and *Building a Roadster Body Part 2*. You can see segments of these on my YouTube channel.

Believe me, I'm not trying to dampen your enthusiasm. I'd love to see you succeed with making an aluminum-bodied Charger, but I don't think the flow-forming process is feasible for the larger sheetmetal panels.

➤ You can email your questions to Professor Hammer at covell@cruzio.com, or mail to: Covell Creative Metalworking, 106 Airport Blvd., Suite 105, Freedom, CA 95019; you'll receive a personal reply. Ron Covell has made many DVDs on metalworking, and he offers an ongoing series of workshops across the nation. Check them out online at covell.biz, or call for a current schedule of workshops and a free catalog of DVDs. Phone (800) 747-4631, or (831) 768-0705. You'll also enjoy Ron's YouTube channel: youtube.com/user/covellron.

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